Full wwPDB NMR Structure Validation Report ⓘ

Apr 21, 2024 – 07:06 AM EDT

PDB ID	:	2L1L
Title	:	NMR Solution Structure of the Phi0 PKI NES Peptide in Complex with CRM1-RanGTP
Authors	:	Madl, T.; Sattler, M.
Deposited on	:	2010-07-29

This is a Full wwPDB NMR 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/NMRValidationReportHelp
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:

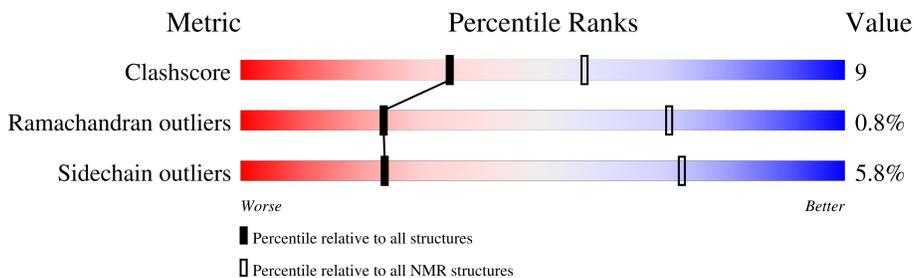|		
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
SOLUTION NMR

The overall completeness of chemical shifts assignment was not calculated.

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	Percentile Ranks	Value
Clashscore		9
Ramachandran outliers		0.8%
Sidechain outliers		5.8%

Worse ⬛ Percentile relative to all structures   *Better*

▯ Percentile relative to all NMR structures

Metric	Whole archive (#Entries)	NMR archive (#Entries)
Clashscore	158937	12864
Ramachandran outliers	154571	11451
Sidechain outliers	154315	11428

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and 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%

Mol	Chain	Length	Quality of chain
1	A	27	100%
2	B	127	85% 15%

WORLDWIDE
wwPDB
PROTEIN DATA BANK

2 Ensemble composition and analysis ⓘ

This entry contains 10 models. Model 2 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy*.

The following residues are included in the computation of the global validation metrics.

Well-defined (core) protein residues			
Well-defined core	Residue range (total)	Backbone RMSD (Å)	Medoid model
1	B:504-B:630 (127)	0.00	2

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

NmrClust was unable to cluster the ensemble.

Error message: No clusters in NmrClust output

3 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 2475 atoms, of which 1247 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called cAMP-dependent protein kinase inhibitor alpha.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	27	380	114	189	32	44	1	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	expression tag	UNP P61925
A	7	LEU	SER	conflict	UNP P61925
A	27	CYS	-	expression tag	UNP P61925

- Molecule 2 is a protein called Exportin-1.

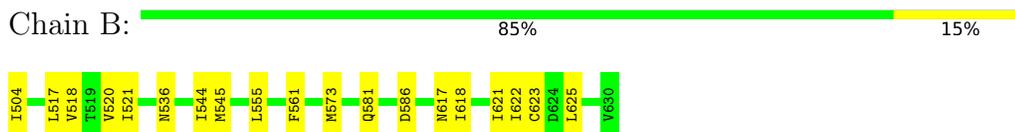| Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
2	B	127	2095	663	1058	181	184	9	0

4 Residue-property plots ⓘ

4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-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 outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A:

100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B:

85%   15%

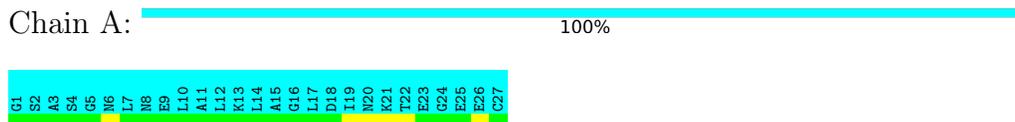I504 L517 V518 T519 V520 I521 N536 I544 M545 L555 F561 M573 Q581 D586 N617 I618 I621 I622 C623 D624 L625 V630
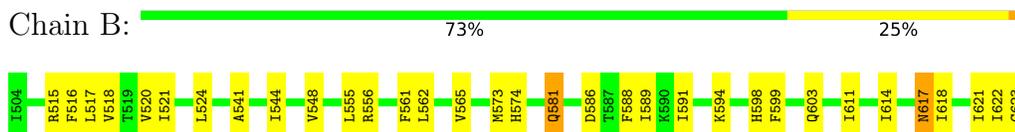
4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A:

100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B:

73%   25%   •

I504 R515 F516 L517 V518 T519 V520 I521 L524 A541 I544 V548 L555 R556 F561 L562 V565 M573 H574 Q581 D586 T587 F588 I589 K590 I591 K594 H598 F599 Q603 I611 I614 N617 I618 I621 I622 C623 D624 L625 V630

4.2.2 Score per residue for model 2 (medoid)

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A:

• Molecule 2: Exportin-1

Chain B:

4.2.3 Score per residue for model 3

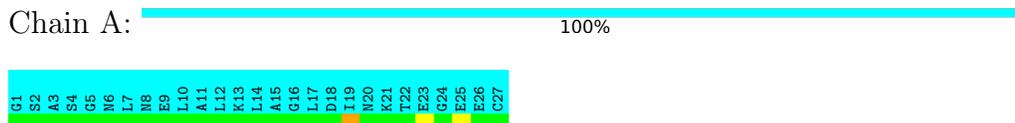• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A:

• Molecule 2: Exportin-1

Chain B:

4.2.4 Score per residue for model 4

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha
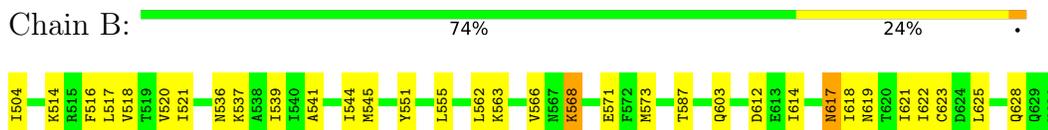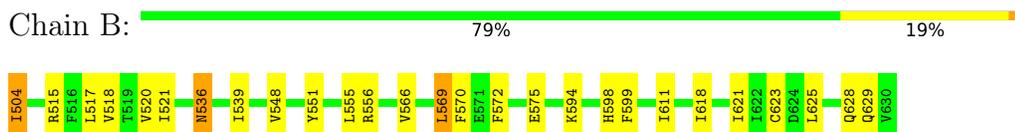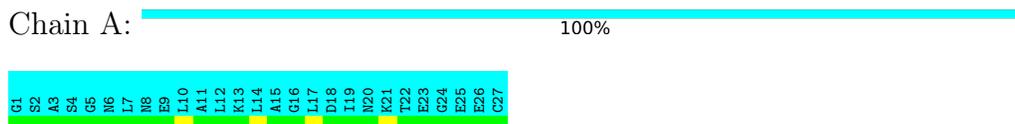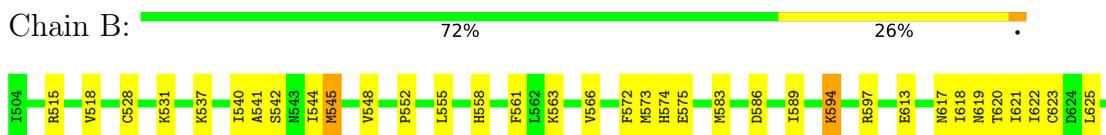
Chain A:

• Molecule 2: Exportin-1

Chain B:

Q628 Q629 V630

4.2.5 Score per residue for model 5

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A: 100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B: 68% 29%

I504 E510 K514 R515 F516 L517 V518 T519 V520 I521 I539 I540 M545 Y546 I547 V548 G549 Q550 L555 W559 K560 F561 L562 V565 E571 F572 M573 H574 E575 T576 H577 V580 Q581 D586 T587 F588 I589 K590 I591 A592 Q593 Q603 I614 N617 I618 N619 T620

I621 I622 C623 D624 L625 V630
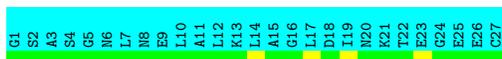
4.2.6 Score per residue for model 6

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A: 100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B: 75% 23%

I504 E510 L517 V520 I521 L525 K534 D535 N536 K537 A538 I539 I540 I544 M545 W559 K560 F561 K568 L569 M573 A584 Q585 D586 I589 Q603 I618 N619 T620 I621 I622 C623 D624 L625 Q626 P627 V630
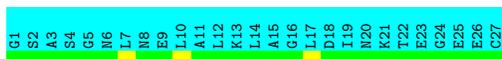
4.2.7 Score per residue for model 7

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A: 100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B: 76% 23%

I504 A507 E511 L517 V520 I521 E529 I544 M545 Y546 I547 R556 W559 F570 M573 H574 E575 T576 H577 V580 Q581 T587 F588 I591 A592 R596 R597 H598 I622 C623 D624 L625 Q626 P627 V630
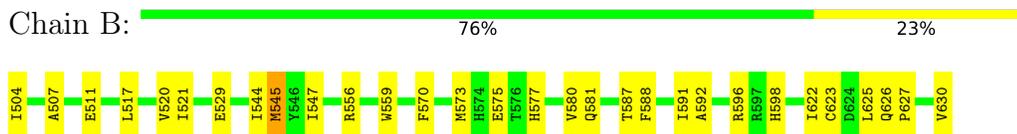
4.2.8 Score per residue for model 8

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A: 100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B: 76% 20%

I504 A507 R515 F516 L517 V518 I521 L525 K534 D535 N536 K537 I540 I544 M545 V548 Y551 L555 L562 V565 F570 E571 H574 T587 E613 N616 N617 I618 I621 I622 C623 Q626 P627 V630
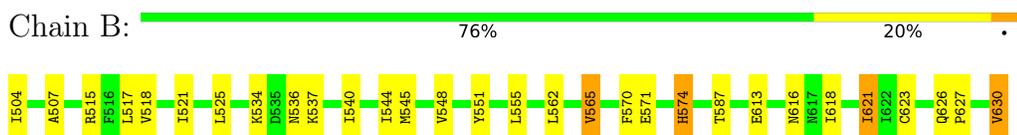
4.2.9 Score per residue for model 9

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A: 100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B: 80% 17%

I504 A507 F516 L517 V518 T519 V520 I521 K522 L525 K534 A541 I544 M545 Q550 F561 T564 K568 E575 T576 H577 V580 Q581 R596 R597 H598 F599 I611 L615 I618 C623 V630
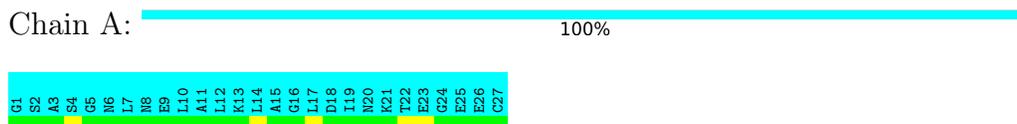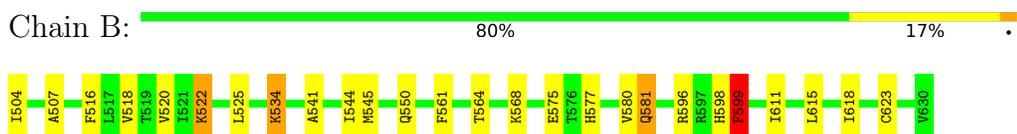
4.2.10 Score per residue for model 10

• Molecule 1: cAMP-dependent protein kinase inhibitor alpha

Chain A: 100%

G1 S2 A3 S4 G5 N6 L7 N8 E9 L10 A11 L12 K13 L14 A15 G16 L17 D18 I19 N20 K21 T22 E23 G24 E25 E26 C27

• Molecule 2: Exportin-1

Chain B:

80%   19%   •

I504 E510 K514 R515 F516 L517 V518 T519 V520 I521 N536 M545 R556 K563 F570 M573 H577 D586 T587 F588 I589 H598 D612 N617 I618 N619 T620 I621 I622 C623 D624 L625 V630

5 Refinement protocol and experimental data overview ⓘ

The models were refined using the following method: *simulated annealing.*

Of the 1000 calculated structures, 10 were deposited, based on the following criterion: *structures with the lowest energy.*

The following table shows the software used for structure solution, optimisation and refinement.

Software name	Classification	Version
Sparky	structure solution	
ARIA	geometry optimization	1.2
CNS	geometry optimization	
CNS	refinement	

No chemical shift data was provided.

6 Model quality (i)

6.1 Standard geometry (i)

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 (average) 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
2	B	0.33±0.04	0±1/1056 (0.0± 0.1%)	0.44±0.01	0±0/1419 (0.0± 0.0%)
All	All	0.33	2/10560 (0.0%)	0.44	0/14190 (0.0%)

All unique bond outliers are listed below. They are sorted according to the Z-score of the worst occurrence in the ensemble.

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
2	B	599	PHE	CE1-CZ	8.11	1.52	1.37	9	1
2	B	599	PHE	CE2-CZ	-6.30	1.25	1.37	9	1

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 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 each 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 averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	0	0	0	0±0
2	B	1037	1058	1050	18±4
All	All	10370	10580	10500	184

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 9.

All unique clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
2:B:569:LEU:HD11	2:B:584:ALA:O	0.75	1.82	6	1
2:B:562:LEU:O	2:B:565:VAL:HG22	0.75	1.80	5	1
2:B:504:ILE:HG13	2:B:507:ALA:HB3	0.74	1.60	9	2
2:B:573:MET:HB3	2:B:625:LEU:HD11	0.69	1.65	10	5
2:B:577:HIS:O	2:B:580:VAL:HG12	0.68	1.88	7	2
2:B:504:ILE:HG12	2:B:507:ALA:HB3	0.68	1.66	8	1
2:B:627:PRO:O	2:B:630:VAL:HG22	0.67	1.89	6	2
2:B:626:GLN:O	2:B:630:VAL:HG13	0.62	1.95	6	2
2:B:622:ILE:HA	2:B:625:LEU:HD13	0.62	1.70	10	5
2:B:573:MET:HB3	2:B:625:LEU:HD21	0.61	1.72	7	2
2:B:545:MET:HB3	2:B:587:THR:HG21	0.61	1.73	7	5
2:B:516:PHE:O	2:B:520:VAL:HG13	0.60	1.97	5	2
2:B:577:HIS:O	2:B:580:VAL:HG22	0.59	1.97	5	1
2:B:517:LEU:HA	2:B:520:VAL:HG22	0.58	1.74	1	2
2:B:575:GLU:HB3	2:B:580:VAL:HG21	0.58	1.75	5	1
2:B:520:VAL:HG23	2:B:521:ILE:HG13	0.57	1.75	1	1
2:B:569:LEU:HD21	2:B:584:ALA:O	0.57	2.00	6	1
2:B:586:ASP:O	2:B:589:ILE:HG22	0.56	2.01	4	4
2:B:569:LEU:HD13	2:B:569:LEU:O	0.54	2.02	6	1
2:B:548:VAL:HG13	2:B:555:LEU:HD11	0.53	1.79	8	1
2:B:517:LEU:HD21	2:B:551:TYR:CG	0.53	2.39	8	1
2:B:536:ASN:O	2:B:539:ILE:HG22	0.52	2.05	6	2
2:B:626:GLN:O	2:B:630:VAL:HG23	0.52	2.05	7	1
2:B:520:VAL:HG23	2:B:521:ILE:HG23	0.52	1.80	5	1
2:B:622:ILE:HA	2:B:625:LEU:HD23	0.52	1.81	7	1
2:B:617:ASN:HD22	2:B:617:ASN:C	0.52	2.08	1	2
2:B:534:LYS:HD3	2:B:534:LYS:H	0.51	1.63	6	1
2:B:581:GLN:NE2	2:B:581:GLN:H	0.51	2.03	1	1
2:B:517:LEU:O	2:B:521:ILE:HG22	0.51	2.06	3	3
2:B:521:ILE:HG22	2:B:547:ILE:CD1	0.51	2.36	7	1
2:B:566:VAL:HA	2:B:569:LEU:HD23	0.50	1.83	3	1
2:B:520:VAL:HG13	2:B:521:ILE:HG23	0.50	1.83	6	2
2:B:556:ARG:HG3	2:B:598:HIS:NE2	0.50	2.21	7	4
2:B:575:GLU:CG	2:B:580:VAL:HG11	0.50	2.37	7	2
2:B:588:PHE:O	2:B:591:ILE:HG22	0.50	2.06	1	1
2:B:539:ILE:CG2	2:B:540:ILE:N	0.49	2.74	5	1
2:B:525:LEU:HD22	2:B:544:ILE:HD13	0.49	1.85	6	1
2:B:545:MET:SD	2:B:583:MET:HB3	0.48	2.49	4	1
2:B:558:HIS:ND1	2:B:561:PHE:HB2	0.48	2.23	4	1
2:B:525:LEU:HD12	2:B:544:ILE:HD13	0.48	1.85	8	1
2:B:562:LEU:HD12	2:B:591:ILE:HD11	0.47	1.86	1	1
2:B:580:VAL:HG13	2:B:581:GLN:N	0.47	2.24	7	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
2:B:517:LEU:HD12	2:B:518:VAL:N	0.47	2.25	2	1
2:B:517:LEU:HA	2:B:520:VAL:HG12	0.47	1.85	6	3
2:B:517:LEU:O	2:B:517:LEU:HD23	0.47	2.09	5	1
2:B:542:SER:O	2:B:545:MET:HG2	0.47	2.10	4	1
2:B:524:LEU:HD23	2:B:544:ILE:HB	0.47	1.86	1	1
2:B:516:PHE:O	2:B:520:VAL:HG23	0.47	2.10	9	3
2:B:563:LYS:HG3	2:B:603:GLN:HE22	0.47	1.69	2	1
2:B:551:TYR:O	2:B:555:LEU:HD23	0.46	2.11	3	2
2:B:544:ILE:O	2:B:547:ILE:CG1	0.46	2.64	7	1
2:B:599:PHE:CD1	2:B:599:PHE:C	0.46	2.88	9	1
2:B:617:ASN:ND2	2:B:617:ASN:C	0.46	2.68	2	1
2:B:548:VAL:HG11	2:B:565:VAL:HG21	0.46	1.85	8	1
2:B:534:LYS:H	2:B:534:LYS:HD2	0.46	1.69	9	1
2:B:599:PHE:O	2:B:611:ILE:HG23	0.46	2.11	3	2
2:B:515:ARG:O	2:B:518:VAL:HG12	0.46	2.11	4	2
2:B:515:ARG:O	2:B:518:VAL:HG22	0.46	2.11	5	3
2:B:559:TRP:HB2	2:B:603:GLN:NE2	0.46	2.26	5	2
2:B:544:ILE:HG13	2:B:545:MET:N	0.46	2.26	2	2
2:B:544:ILE:O	2:B:547:ILE:HG12	0.46	2.11	7	1
2:B:622:ILE:CG2	2:B:630:VAL:HG22	0.46	2.42	7	1
2:B:548:VAL:HG23	2:B:555:LEU:HD21	0.45	1.88	3	1
2:B:571:GLU:O	2:B:574:HIS:ND1	0.45	2.50	8	1
2:B:563:LYS:O	2:B:566:VAL:HG12	0.45	2.12	2	2
2:B:562:LEU:O	2:B:565:VAL:HG12	0.45	2.11	8	1
2:B:580:VAL:HG23	2:B:581:GLN:N	0.45	2.27	5	1
2:B:618:ILE:N	2:B:618:ILE:HD13	0.45	2.27	6	1
2:B:572:PHE:HA	2:B:575:GLU:HG2	0.45	1.87	3	2
2:B:561:PHE:O	2:B:565:VAL:HG13	0.44	2.12	5	1
2:B:618:ILE:O	2:B:621:ILE:HG12	0.44	2.13	1	5
2:B:504:ILE:CG1	2:B:507:ALA:HB3	0.44	2.40	8	1
2:B:613:GLU:HA	2:B:616:ASN:ND2	0.44	2.27	8	1
2:B:614:ILE:O	2:B:617:ASN:ND2	0.44	2.50	2	3
2:B:628:GLN:NE2	2:B:628:GLN:H	0.44	2.10	2	1
2:B:555:LEU:HD12	2:B:562:LEU:HA	0.44	1.88	2	1
2:B:559:TRP:HB2	2:B:603:GLN:HE21	0.44	1.71	6	1
2:B:618:ILE:O	2:B:621:ILE:CG2	0.44	2.66	3	2
2:B:575:GLU:HG3	2:B:580:VAL:HG11	0.44	1.88	7	1
2:B:514:LYS:O	2:B:517:LEU:HG	0.43	2.13	2	1
2:B:591:ILE:HG13	2:B:592:ALA:N	0.43	2.29	5	2
2:B:618:ILE:HG12	2:B:619:ASN:N	0.43	2.28	6	1
2:B:599:PHE:C	2:B:599:PHE:HD1	0.43	2.16	9	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
2:B:537:LYS:HA	2:B:540:ILE:HG22	0.43	1.89	4	2
2:B:514:LYS:O	2:B:518:VAL:HG13	0.43	2.14	5	1
2:B:618:ILE:O	2:B:621:ILE:HG22	0.43	2.14	8	3
2:B:596:ARG:HA	2:B:599:PHE:CE2	0.43	2.48	9	1
2:B:548:VAL:HG22	2:B:555:LEU:HD11	0.42	1.91	1	3
2:B:504:ILE:N	2:B:504:ILE:HD13	0.42	2.29	3	1
2:B:536:ASN:O	2:B:539:ILE:CG1	0.42	2.67	2	1
2:B:625:LEU:HD22	2:B:629:GLN:HE21	0.42	1.74	3	1
2:B:599:PHE:O	2:B:611:ILE:HG12	0.42	2.14	9	1
2:B:541:ALA:O	2:B:544:ILE:HG12	0.42	2.13	2	2
2:B:536:ASN:O	2:B:539:ILE:CG2	0.42	2.68	3	1
2:B:570:PHE:HA	2:B:621:ILE:HD11	0.42	1.90	8	1
2:B:586:ASP:O	2:B:589:ILE:HG12	0.42	2.14	10	1
2:B:617:ASN:HB2	2:B:620:THR:HG22	0.42	1.91	4	1
2:B:541:ALA:O	2:B:544:ILE:HG22	0.42	2.14	4	1
2:B:618:ILE:HG13	2:B:619:ASN:N	0.42	2.30	4	2
2:B:518:VAL:O	2:B:522:LYS:HB2	0.42	2.14	9	1
2:B:618:ILE:O	2:B:621:ILE:CG1	0.41	2.68	2	2
2:B:628:GLN:HE21	2:B:628:GLN:HA	0.41	1.74	4	1
2:B:547:ILE:O	2:B:550:GLN:HG2	0.41	2.15	5	1
2:B:575:GLU:CB	2:B:580:VAL:HG21	0.41	2.45	5	1
2:B:521:ILE:O	2:B:525:LEU:HD13	0.41	2.14	8	1
2:B:622:ILE:HG21	2:B:630:VAL:HG13	0.41	1.91	7	1
2:B:541:ALA:O	2:B:544:ILE:CG2	0.41	2.68	1	1
2:B:552:PRO:HG2	2:B:594:LYS:HG2	0.41	1.91	4	1
2:B:545:MET:SD	2:B:583:MET:C	0.41	2.99	4	1
2:B:621:ILE:O	2:B:621:ILE:HD13	0.41	2.16	8	1
2:B:594:LYS:N	2:B:594:LYS:HD2	0.41	2.31	1	1
2:B:588:PHE:HA	2:B:591:ILE:HG12	0.41	1.92	5	2
2:B:618:ILE:HG23	2:B:619:ASN:N	0.41	2.31	5	1
2:B:615:LEU:HD13	2:B:618:ILE:HD11	0.41	1.93	9	1
2:B:626:GLN:HB3	2:B:627:PRO:HD2	0.41	1.93	7	1
2:B:617:ASN:O	2:B:620:THR:HG22	0.41	2.15	10	1
2:B:569:LEU:HD21	2:B:584:ALA:HA	0.40	1.92	6	1
2:B:569:LEU:CD2	2:B:584:ALA:HA	0.40	2.47	6	1
2:B:575:GLU:HB3	2:B:580:VAL:HG11	0.40	1.92	9	1
2:B:561:PHE:O	2:B:565:VAL:HG23	0.40	2.16	1	1
2:B:568:LYS:HA	2:B:568:LYS:HE2	0.40	1.94	2	1
2:B:536:ASN:O	2:B:540:ILE:HD13	0.40	2.16	8	1

6.3 Torsion angles ⓘ

6.3.1 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 PDB entries followed by that with respect to all NMR entries. 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	0	-	-	-	-	
2	B	125/127 (98%)	119±0 (95±0%)	5±0 (4±0%)	1±0 (1±0%)	24	71
All	All	1250/1540 (81%)	1190 (95%)	50 (4%)	10 (1%)	24	71

All 1 unique Ramachandran outliers are listed below.

Mol	Chain	Res	Type	Models (Total)
2	B	623	CYS	10

6.3.2 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 PDB entries followed by that with respect to all NMR entries. 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	0	-	-	-	
2	B	115/115 (100%)	108±1 (94±1%)	7±1 (6±1%)	24	73
All	All	1150/1350 (85%)	1083 (94%)	67 (6%)	24	73

All 42 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
2	B	504	ILE	4
2	B	574	HIS	3
2	B	617	ASN	3
2	B	570	PHE	3
2	B	545	MET	3
2	B	510	GLU	3
2	B	561	PHE	3
2	B	534	LYS	3

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Mol	Chain	Res	Type	Models (Total)
2	B	581	GLN	2
2	B	568	LYS	2
2	B	571	GLU	2
2	B	612	ASP	2
2	B	536	ASN	2
2	B	594	LYS	2
2	B	628	GLN	2
2	B	630	VAL	2
2	B	603	GLN	1
2	B	569	LEU	1
2	B	531	LYS	1
2	B	597	ARG	1
2	B	613	GLU	1
2	B	539	ILE	1
2	B	586	ASP	1
2	B	593	GLN	1
2	B	560	LYS	1
2	B	618	ILE	1
2	B	511	GLU	1
2	B	529	GLU	1
2	B	559	TRP	1
2	B	596	ARG	1
2	B	537	LYS	1
2	B	565	VAL	1
2	B	621	ILE	1
2	B	522	LYS	1
2	B	525	LEU	1
2	B	550	GLN	1
2	B	598	HIS	1
2	B	599	PHE	1
2	B	517	LEU	1
2	B	563	LYS	1
2	B	577	HIS	1
2	B	622	ILE	1

6.3.3 RNA ⓘ

There are no RNA molecules in this entry.

6.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

6.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.6 Ligand geometry ⓘ

There are no ligands in this entry.

6.7 Other polymers ⓘ

There are no such molecules in this entry.

6.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

7 Chemical shift validation ⓘ

No chemical shift data were provided