Full wwPDB NMR Structure Validation Report (i)

Mar 1, 2022 – 12:36 PM EST

PDB ID	:	2GGF
Title	:	Solution structure of the MA3 domain of human Programmed cell death 4
Authors	:	Nagata, T.; Muto, Y.; Inoue, M.; Kigawa, T.; Terada, T.; Shirouzu, M.; Yokoyama, S.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)
Deposited on	:	2006-03-24

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 (i) symbol.

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

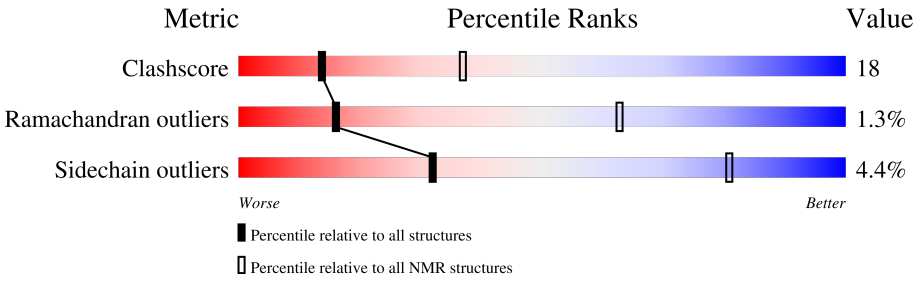
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
ShiftChecker	:	2.27
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.27

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	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	137	61% 26% • 12%

2 Ensemble composition and analysis (i)

This entry contains 20 models. Model 14 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	A:328-A:448 (121)	0.23	14

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

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

The models can be grouped into 4 clusters and 5 single-model clusters were found.

Cluster number	Models
1	3, 7, 8, 10, 13, 14, 17, 20
2	1, 9, 11
3	5, 19
4	15, 18
Single-model clusters	2; 4; 6; 12; 16

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 2156 atoms, of which 1075 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Programmed cell death 4, isoform 1.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	137	2156	685	1075	176	213	7	0

There are 13 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	320	GLY	-	cloning artifact	GB 19913545
A	321	SER	-	cloning artifact	GB 19913545
A	322	SER	-	cloning artifact	GB 19913545
A	323	GLY	-	cloning artifact	GB 19913545
A	324	SER	-	cloning artifact	GB 19913545
A	325	SER	-	cloning artifact	GB 19913545
A	326	GLY	-	cloning artifact	GB 19913545
A	451	SER	-	cloning artifact	GB 19913545
A	452	GLY	-	cloning artifact	GB 19913545
A	453	PRO	-	cloning artifact	GB 19913545
A	454	SER	-	cloning artifact	GB 19913545
A	455	SER	-	cloning artifact	GB 19913545
A	456	GLY	-	cloning artifact	GB 19913545

4 Residue-property plots (i)

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: Programmed cell death 4, isoform 1

Chain A: 61% 26% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 E330 M333 L334 L335 K336 E348 H349 C350 L354 E355 V356 P357 H358 H361 E362 Y365 E366 A367 F380 I383 W391 K392 T397 V398 D399 Q400 M401 K402 R403 G404 Y405 E406 R407 E411 I412 P413 V419 P420 H421 S422

F429 I438 I439 L443 L446 S449 R450 S451 G452 P453 S454 S455 G456

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: Programmed cell death 4, isoform 1

Chain A: 53% 32% • 12%

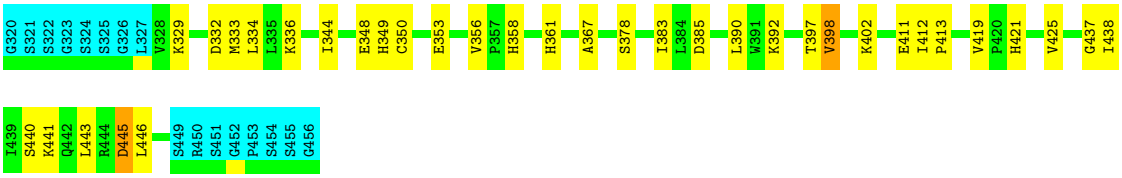
G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 I331 D332 M333 L334 E348 H349 C350 L354 E355 V356 P357 H358 A367 G376 E377 S378 T379 F380 K381 M382 I383 L390 T397 V398 D399 Q400 M401 K402 R403 E406 R407 I408 Y409 N410 E411 I412 P413 D414 I415 N416 L417 D418

H421 S422 Y423 L426 F429 V430 F434 I438 I439 L443 C447 P448 S449 R450 S451 G452 P453 S454 S455 G456

4.2.2 Score per residue for model 2

• Molecule 1: Programmed cell death 4, isoform 1

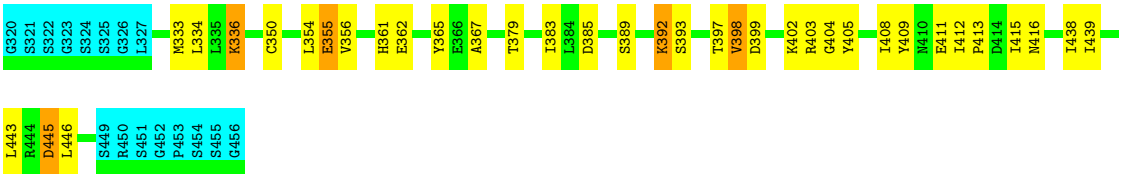
Chain A: 63% 24% • 12%



4.2.3 Score per residue for model 3

- Molecule 1: Programmed cell death 4, isoform 1

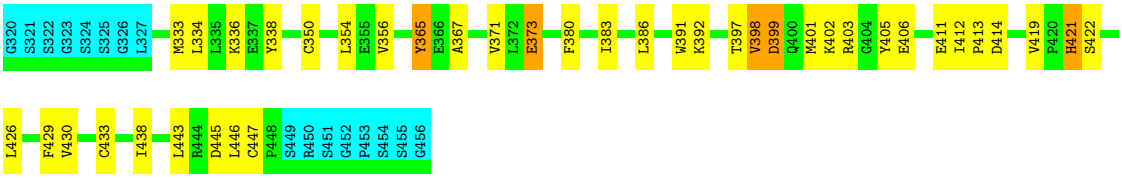
Chain A: 62% 23% • 12%



4.2.4 Score per residue for model 4

- Molecule 1: Programmed cell death 4, isoform 1

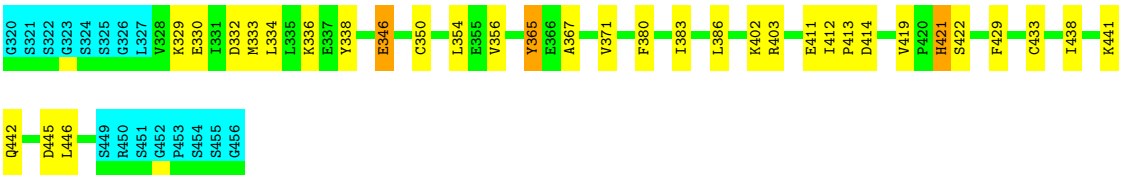
Chain A: 59% 26% • 12%



4.2.5 Score per residue for model 5

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 64% 22% • 12%



4.2.6 Score per residue for model 6

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 52% 34% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 I331 D332 M333 L334 L335 K336 A347 E348 H349 C350 H358 F359 H360 H361 E362 L363 V364 Y365 E366 A367 V371 S374 F380 I383 L390 W391 K392 V398 D399 Q400 M401 K402 R403 G404 Y405 E406 R407 I408 E411 I412

P413 N416 L417 D418 V419 P420 H421 S422 L426 F429 V430 C433 F434 I438 I439 S440 K441 S449 R450 S451 G452 P453 S454 S455 G456

4.2.7 Score per residue for model 7

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 55% 31% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 I331 L334 I344 E348 H349 C350 L351 V356 H361 E362 L363 A367 V371 T379 F380 I383 L384 D385 L390 W391 K392 T397 V398 D399 Q400 M401 K402 R403 G404 Y405 E406 E411 I412 P413 D414 I415

D418 V419 P420 H421 S422 V425 F429 F434 I438 K441 Q442 L443 R444 S449 R450 S451 G452 P453 S454 S455 G456

4.2.8 Score per residue for model 8

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 56% 29% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 E330 L334 I344 S345 E348 H349 C350 L351 K352 E353 V356 P357 H360 H361 E362 L363 V364 Y365 E366 A367 S374 F380 I383 L384 D385 L386 L390 T397 V398 D399 R403 G404 Y405 E406 R407 I408 E411 I412 P413

D418 V419 P420 H421 S422 L426 V430 I438 I439 Q442 L443 L446 S449 R450 S451 G452 P453 S454 S455 G456

4.2.9 Score per residue for model 9

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 55% 31% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 I331 D332 M333 L334 L335 K336 E337 Y338 E348 H349 E353 L354 E355 V356 P357 H358 F359 A367 L372 S378 T379 F380 I383 L384 D385 L386 K392 S393 S394 T397 V398 D399 Q400 M401 K402 R403 G404 R407 E411

I412 P413 N416 H421 S422 L426 F429 C433 F434 I438 I439 R444 S449 R450 S451 G452 P453 S454 S455 G456

4.2.10 Score per residue for model 10

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 58% 29% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 L334 C350 L354 E355 V356 P357 H360 H361 E362 L363 A367 L372 E377 S378 T379 F380 I383 S393 S394 D399 Q400 M401 K402 R403 R407 E411 I412 P413 D414 I415 H421 L426 F429 V430

F434 Q435 A436 G437 I438 I439 Q442 L443 L446 S449 R450 S451 G452 P453 S454 S455 G456

4.2.11 Score per residue for model 11

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 57% 27% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 M333 L334 L335 K336 H349 C350 E353 L354 E355 V356 P357 H358 H361 E362 Y365 E366 A367 M370 S374 F380 I383 W391 K392 T397 V398 K402 R403 G404 Y405 E406 R407 I408 E411 I412 P413 V419 P420 H421

L426 F429 V430 G437 I438 I439 L443 L446 C447 P448 S449 R450 S451 G452 P453 S454 S455 G456

4.2.12 Score per residue for model 12

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 55% 31% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 E330 I331 D332 M333 L334 L335 I344 S345 E346 A347 C350 L354 E355 V356 P357 H358 F359 H360 H361 Y365 E366 A367 G376 K381 H382 I383 L386 W391 K392 T395 I396 T397 V398 D399 Q400 M401 K402 R407 I408 E411

I412 P413 H421 S422 Y423 S424 V425 E431 E432 C433 I438 I439 R444 P448 S449 R450 S451 G452 P453 S454 S455 G456

4.2.13 Score per residue for model 13

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 55% 30% • 12%

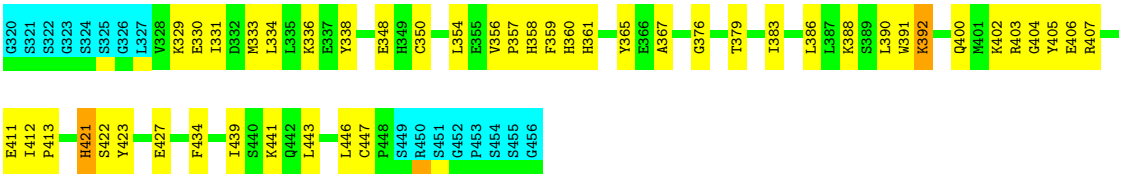
G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 D332 M333 L334 E348 H349 C350 E362 Y365 E366 A367 L372 S378 T379 F380 I383 L390 W391 K392 S393 S394 T397 V398 D399 Q400 M401 K402 R403 G404 Y405 E406 R407 I408 E411 I412 P413 D414 I415 V419 P420

H421 S422 V425 F434 I438 I439 S440 L443 R444 D445 L446 C447 P448 S449 R450 S451 G452 P453 S454 S455 G456

4.2.14 Score per residue for model 14 (medoid)

- Molecule 1: Programmed cell death 4, isoform 1

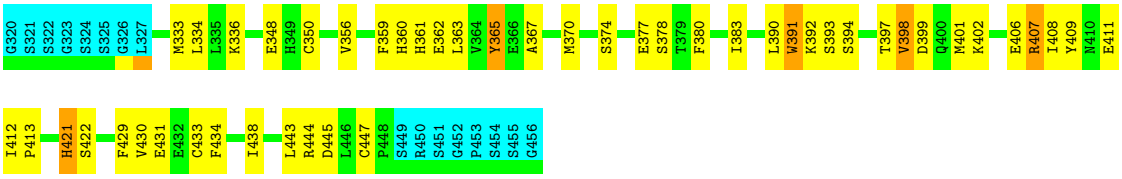
Chain A: 55% 32% • 12%



4.2.15 Score per residue for model 15

- Molecule 1: Programmed cell death 4, isoform 1

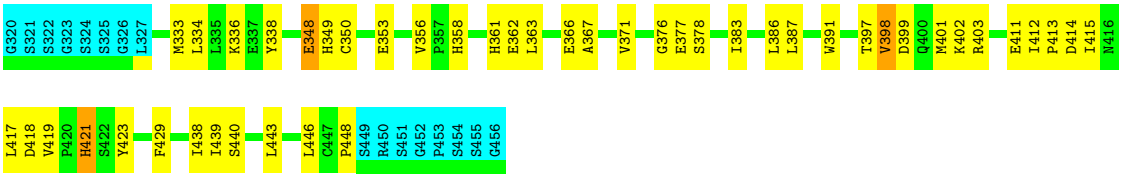
Chain A: 53% 31% • 12%



4.2.16 Score per residue for model 16

- Molecule 1: Programmed cell death 4, isoform 1

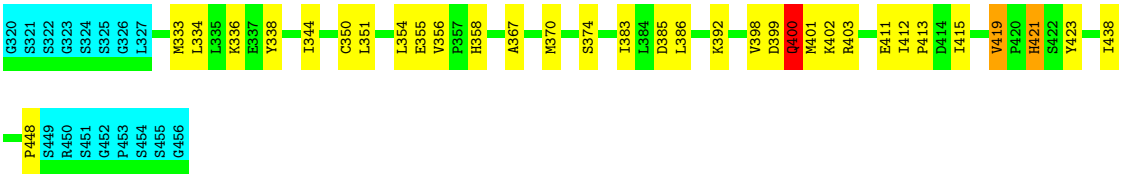
Chain A: 55% 31% • 12%



4.2.17 Score per residue for model 17

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 64% 22% •• 12%



4.2.18 Score per residue for model 18

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 57% 29% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 M333 L334 C350 L351 V356 P357 H360 L363 V364 Y365 E366 A367 L372 G376 E377 S378 T379 F380 K381 M382 I383 K388 K392 T397 V398 D399 Q400 R403 G404 Y405 E406 R407 E411 I412 P413 D418

V419 P420 H421 S422 Y423 S424 V425 C433 I438 I439 D445 L446 S449 R450 S451 G452 P453 S454 S455 G456

4.2.19 Score per residue for model 19

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 49% 37% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 V328 K329 E330 I331 D332 M333 L334 L335 K336 H349 C350 L351 K352 E353 V356 P357 H358 F359 H360 H361 E362 L363 V364 Y365 V371 F380 D385 K392 S393 S394 T397 V398 D399 Q400 M401 K402 R403 G404 Y405 E406 R407 I408 Y409 N410 E411

I412 P413 D414 H421 S422 Y423 L426 F429 V430 I438 K441 Q442 L443 R444 D445 L446 S449 R450 S451 G452 P453 S454 S455 G456

4.2.20 Score per residue for model 20

- Molecule 1: Programmed cell death 4, isoform 1

Chain A: 57% 30% • 12%

G320 S321 S322 G323 S324 S325 G326 L327 E330 L334 L335 Y338 H349 C350 L354 E355 V356 P357 H358 F359 H360 H361 E362 L363 V364 Y365 E366 A367 F380 I383 L386 S389 K392 V398 D399 Q400 R403 G404 Y405 E406 E411 I412 P413 D414 V419 P420

H421 S422 F429 C433 F434 G437 I438 I439 S440 K441 Q442 L443 R444 S449 R450 S451 G452 P453 S454 S455 G456

5 Refinement protocol and experimental data overview (i)

The models were refined using the following method: *torsion angle dyanamics, simulated annealing.*

Of the 100 calculated structures, 20 were deposited, based on the following criterion: *target function.*

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

Software name	Classification	Version
CYANA	structure solution	2.0.17
CYANA	refinement	2.0.17

No chemical shift data was provided.

6 Model quality (i)

6.1 Standard geometry (i)

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

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	987	989	989	35±4
All	All	19740	19780	19780	703

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 18.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:412:ILE:N	1:A:413:PRO:CD	0.83	2.42	14	20
1:A:334:LEU:HD13	1:A:350:CYS:HB3	0.83	1.51	18	18
1:A:354:LEU:O	1:A:356:VAL:HG13	0.82	1.74	11	11
1:A:373:GLU:OE2	1:A:419:VAL:HG21	0.80	1.77	4	1
1:A:367:ALA:HB1	1:A:383:ILE:HG23	0.78	1.54	10	19
1:A:348:GLU:CD	1:A:390:LEU:HD23	0.75	2.03	1	2
1:A:392:LYS:NZ	1:A:438:ILE:HG23	0.73	1.99	2	2
1:A:415:ILE:HG22	1:A:419:VAL:HG23	0.69	1.64	16	2
1:A:412:ILE:N	1:A:413:PRO:HD2	0.68	2.02	18	20
1:A:330:GLU:OE1	1:A:354:LEU:HD22	0.67	1.89	12	1
1:A:443:LEU:HA	1:A:446:LEU:HD12	0.66	1.66	19	2
1:A:412:ILE:HG22	1:A:413:PRO:HD3	0.66	1.68	19	20
1:A:396:ILE:HG23	1:A:400:GLN:CD	0.65	2.11	12	1
1:A:405:TYR:CE2	1:A:439:ILE:CG2	0.65	2.80	6	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:419:VAL:HG13	1:A:421:HIS:CD2	0.65	2.27	2	6
1:A:433:CYS:HB3	1:A:438:ILE:HD11	0.65	1.69	12	6
1:A:372:LEU:HD21	1:A:426:LEU:HB2	0.64	1.69	9	2
1:A:331:ILE:HD13	1:A:362:GLU:HG3	0.64	1.67	19	1
1:A:421:HIS:CE1	1:A:425:VAL:HG21	0.64	2.27	2	2
1:A:415:ILE:CG2	1:A:419:VAL:HG23	0.63	2.23	16	3
1:A:367:ALA:HB1	1:A:383:ILE:CG2	0.63	2.24	10	8
1:A:402:LYS:HG3	1:A:443:LEU:HD21	0.62	1.71	15	4
1:A:402:LYS:HA	1:A:443:LEU:HD11	0.62	1.71	4	4
1:A:334:LEU:HD13	1:A:350:CYS:CB	0.62	2.24	2	19
1:A:433:CYS:SG	1:A:438:ILE:HD11	0.62	2.35	18	1
1:A:392:LYS:HE3	1:A:438:ILE:HG23	0.62	1.72	6	4
1:A:405:TYR:CE2	1:A:439:ILE:HG21	0.61	2.30	6	2
1:A:419:VAL:CG1	1:A:421:HIS:CD2	0.61	2.84	2	4
1:A:433:CYS:CB	1:A:438:ILE:HD11	0.60	2.27	18	4
1:A:391:TRP:CD1	1:A:401:MET:SD	0.59	2.95	4	4
1:A:434:PHE:HB2	1:A:439:ILE:HD11	0.59	1.74	13	2
1:A:418:ASP:OD1	1:A:419:VAL:HG23	0.59	1.98	7	1
1:A:351:LEU:HD22	1:A:363:LEU:CD2	0.59	2.27	8	1
1:A:356:VAL:O	1:A:360:HIS:CD2	0.59	2.56	8	6
1:A:439:ILE:HB	1:A:443:LEU:HD12	0.58	1.74	16	6
1:A:418:ASP:OD2	1:A:419:VAL:HG23	0.58	1.98	8	1
1:A:438:ILE:HG13	1:A:439:ILE:HG23	0.58	1.75	9	5
1:A:429:PHE:CE2	1:A:433:CYS:SG	0.58	2.96	20	1
1:A:356:VAL:O	1:A:356:VAL:HG23	0.57	1.99	17	15
1:A:348:GLU:OE1	1:A:390:LEU:HD23	0.57	1.99	1	1
1:A:419:VAL:HG12	1:A:421:HIS:CD2	0.56	2.35	20	1
1:A:430:VAL:HG11	1:A:447:CYS:SG	0.56	2.40	15	1
1:A:421:HIS:CD2	1:A:421:HIS:N	0.56	2.74	14	3
1:A:405:TYR:CE1	1:A:439:ILE:HG21	0.55	2.36	18	1
1:A:365:TYR:CD2	1:A:408:ILE:CD1	0.55	2.89	3	4
1:A:330:GLU:OE1	1:A:354:LEU:HD11	0.55	2.01	10	1
1:A:412:ILE:HA	1:A:415:ILE:HD12	0.55	1.78	13	4
1:A:426:LEU:O	1:A:430:VAL:HG23	0.55	2.02	8	7
1:A:367:ALA:CB	1:A:387:LEU:HD21	0.54	2.31	16	1
1:A:392:LYS:HZ1	1:A:438:ILE:HG23	0.54	1.63	2	1
1:A:412:ILE:N	1:A:413:PRO:HD3	0.54	2.18	9	17
1:A:365:TYR:CE2	1:A:408:ILE:HD13	0.54	2.37	12	2
1:A:365:TYR:CE2	1:A:411:GLU:OE2	0.54	2.61	19	1
1:A:331:ILE:HD11	1:A:359:PHE:HB3	0.54	1.80	14	1
1:A:411:GLU:C	1:A:413:PRO:HD2	0.53	2.23	7	20

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:396:ILE:HG23	1:A:400:GLN:CG	0.53	2.33	12	1
1:A:338:TYR:CE1	1:A:386:LEU:HD13	0.53	2.38	9	1
1:A:351:LEU:HD23	1:A:390:LEU:HD12	0.53	1.79	8	1
1:A:421:HIS:ND1	1:A:425:VAL:CG2	0.52	2.73	2	3
1:A:358:HIS:O	1:A:361:HIS:CD2	0.52	2.62	14	5
1:A:331:ILE:HD12	1:A:362:GLU:OE1	0.52	2.05	7	1
1:A:351:LEU:HD13	1:A:363:LEU:HD22	0.52	1.81	19	3
1:A:331:ILE:HD13	1:A:362:GLU:CG	0.52	2.34	19	1
1:A:371:VAL:HG21	1:A:429:PHE:CE2	0.52	2.40	19	5
1:A:349:HIS:CD2	1:A:353:GLU:HG3	0.52	2.40	16	3
1:A:415:ILE:CG2	1:A:419:VAL:CG2	0.52	2.88	16	1
1:A:372:LEU:O	1:A:419:VAL:HG11	0.52	2.05	18	1
1:A:332:ASP:CG	1:A:336:LYS:HZ3	0.51	2.08	2	1
1:A:335:LEU:CD2	1:A:386:LEU:CD2	0.51	2.89	12	1
1:A:421:HIS:ND1	1:A:425:VAL:HG21	0.51	2.21	7	2
1:A:365:TYR:CD2	1:A:408:ILE:HD13	0.51	2.41	3	1
1:A:421:HIS:CD2	1:A:421:HIS:H	0.51	2.24	14	3
1:A:361:HIS:CG	1:A:362:GLU:N	0.50	2.79	15	5
1:A:411:GLU:O	1:A:415:ILE:CD1	0.50	2.59	7	1
1:A:344:ILE:HD11	1:A:385:ASP:HB3	0.50	1.83	17	3
1:A:348:GLU:HA	1:A:390:LEU:HD21	0.50	1.84	14	4
1:A:399:ASP:O	1:A:402:LYS:CB	0.50	2.60	3	2
1:A:405:TYR:CZ	1:A:439:ILE:HG21	0.50	2.41	14	2
1:A:344:ILE:CD1	1:A:385:ASP:OD1	0.50	2.60	7	1
1:A:348:GLU:OE1	1:A:349:HIS:N	0.50	2.45	8	1
1:A:330:GLU:CD	1:A:354:LEU:HD22	0.50	2.27	12	1
1:A:333:MET:O	1:A:336:LYS:N	0.50	2.45	19	11
1:A:380:PHE:C	1:A:380:PHE:CD1	0.50	2.84	18	4
1:A:401:MET:CE	1:A:438:ILE:HD12	0.49	2.37	13	4
1:A:412:ILE:CG2	1:A:413:PRO:HD3	0.49	2.38	17	20
1:A:419:VAL:HG13	1:A:421:HIS:NE2	0.49	2.23	18	2
1:A:434:PHE:CZ	1:A:441:LYS:HD3	0.49	2.43	6	1
1:A:411:GLU:O	1:A:415:ILE:HD12	0.49	2.07	7	1
1:A:380:PHE:CZ	1:A:429:PHE:HA	0.48	2.43	9	9
1:A:405:TYR:CE1	1:A:439:ILE:CG2	0.48	2.95	18	1
1:A:377:GLU:O	1:A:380:PHE:N	0.48	2.46	15	1
1:A:356:VAL:HG12	1:A:358:HIS:CE1	0.48	2.43	20	1
1:A:361:HIS:ND1	1:A:362:GLU:N	0.48	2.61	10	2
1:A:351:LEU:HD23	1:A:390:LEU:CD1	0.48	2.39	8	1
1:A:434:PHE:CD2	1:A:444:ARG:HD3	0.48	2.43	7	2
1:A:338:TYR:CD2	1:A:386:LEU:HD22	0.48	2.43	14	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:423:TYR:CE2	1:A:448:PRO:HB2	0.48	2.43	16	4
1:A:338:TYR:CE2	1:A:386:LEU:HB2	0.48	2.43	17	2
1:A:399:ASP:O	1:A:401:MET:N	0.48	2.47	1	2
1:A:357:PRO:O	1:A:400:GLN:NE2	0.47	2.46	20	4
1:A:376:GLY:O	1:A:378:SER:N	0.47	2.47	1	1
1:A:443:LEU:HD23	1:A:446:LEU:HD12	0.47	1.84	2	1
1:A:349:HIS:CD2	1:A:349:HIS:C	0.47	2.87	20	1
1:A:359:PHE:CD2	1:A:362:GLU:OE2	0.47	2.67	19	1
1:A:365:TYR:CD2	1:A:407:ARG:HB3	0.47	2.44	14	2
1:A:408:ILE:O	1:A:412:ILE:N	0.47	2.48	1	2
1:A:397:THR:O	1:A:398:VAL:C	0.46	2.54	16	13
1:A:409:TYR:CD2	1:A:446:LEU:HB3	0.46	2.45	3	1
1:A:360:HIS:CB	1:A:400:GLN:OE1	0.46	2.64	12	1
1:A:334:LEU:CD1	1:A:350:CYS:CB	0.46	2.92	2	1
1:A:416:ASN:OD1	1:A:416:ASN:C	0.46	2.54	1	3
1:A:423:TYR:CD2	1:A:448:PRO:HB2	0.46	2.46	1	1
1:A:354:LEU:O	1:A:355:GLU:C	0.46	2.54	11	4
1:A:398:VAL:O	1:A:399:ASP:C	0.46	2.54	6	4
1:A:365:TYR:C	1:A:365:TYR:CD1	0.46	2.88	12	1
1:A:362:GLU:O	1:A:366:GLU:CD	0.46	2.55	16	1
1:A:400:GLN:NE2	1:A:403:ARG:NH1	0.46	2.64	17	1
1:A:379:THR:HG22	1:A:383:ILE:HG13	0.45	1.89	14	3
1:A:403:ARG:O	1:A:404:GLY:C	0.45	2.55	14	9
1:A:349:HIS:CD2	1:A:353:GLU:HG2	0.45	2.47	19	3
1:A:365:TYR:CE2	1:A:407:ARG:HB3	0.45	2.46	11	2
1:A:406:GLU:O	1:A:407:ARG:C	0.45	2.55	14	6
1:A:398:VAL:O	1:A:402:LYS:N	0.45	2.48	6	2
1:A:429:PHE:CE1	1:A:433:CYS:SG	0.45	3.09	6	3
1:A:434:PHE:CG	1:A:444:ARG:HD3	0.45	2.47	15	4
1:A:405:TYR:O	1:A:406:GLU:C	0.45	2.55	19	8
1:A:392:LYS:HE2	1:A:438:ILE:HG22	0.45	1.88	9	1
1:A:442:GLN:O	1:A:446:LEU:CD1	0.45	2.64	10	1
1:A:348:GLU:HG3	1:A:390:LEU:HD23	0.45	1.88	13	1
1:A:446:LEU:O	1:A:447:CYS:C	0.45	2.55	13	4
1:A:331:ILE:CD1	1:A:362:GLU:OE1	0.45	2.65	19	1
1:A:395:THR:O	1:A:396:ILE:CG1	0.45	2.65	12	1
1:A:421:HIS:O	1:A:422:SER:C	0.45	2.55	15	13
1:A:333:MET:O	1:A:334:LEU:C	0.45	2.55	2	10
1:A:371:VAL:HG21	1:A:429:PHE:CE1	0.45	2.46	5	1
1:A:338:TYR:CE2	1:A:386:LEU:HD22	0.45	2.46	14	2
1:A:406:GLU:O	1:A:409:TYR:N	0.45	2.49	19	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:332:ASP:O	1:A:333:MET:C	0.45	2.55	1	7
1:A:349:HIS:CD2	1:A:353:GLU:CG	0.45	3.00	19	1
1:A:335:LEU:HD11	1:A:363:LEU:HD12	0.45	1.88	20	1
1:A:445:ASP:O	1:A:446:LEU:C	0.45	2.55	13	6
1:A:434:PHE:CZ	1:A:441:LYS:HG2	0.45	2.46	14	2
1:A:344:ILE:O	1:A:345:SER:C	0.45	2.55	12	2
1:A:401:MET:O	1:A:402:LYS:C	0.44	2.55	10	1
1:A:328:VAL:O	1:A:329:LYS:C	0.44	2.56	19	1
1:A:422:SER:O	1:A:423:TYR:C	0.44	2.55	19	1
1:A:332:ASP:OD1	1:A:336:LYS:NZ	0.44	2.50	2	1
1:A:421:HIS:CE1	1:A:425:VAL:CG2	0.44	2.98	2	1
1:A:377:GLU:O	1:A:378:SER:C	0.44	2.56	16	4
1:A:354:LEU:C	1:A:355:GLU:OE1	0.44	2.56	11	1
1:A:370:MET:O	1:A:374:SER:CB	0.44	2.65	15	3
1:A:334:LEU:CD1	1:A:350:CYS:HB2	0.44	2.42	2	1
1:A:372:LEU:HD23	1:A:425:VAL:HB	0.44	1.90	13	1
1:A:414:ASP:HA	1:A:417:LEU:HD12	0.44	1.88	16	1
1:A:439:ILE:CB	1:A:443:LEU:HD12	0.44	2.43	3	1
1:A:419:VAL:HG12	1:A:422:SER:HB3	0.44	1.89	4	1
1:A:334:LEU:HD11	1:A:347:ALA:HA	0.44	1.88	12	2
1:A:416:ASN:OD1	1:A:417:LEU:HD22	0.44	2.11	6	1
1:A:329:LYS:O	1:A:330:GLU:C	0.44	2.56	19	5
1:A:360:HIS:O	1:A:361:HIS:C	0.44	2.56	19	3
1:A:357:PRO:O	1:A:400:GLN:CD	0.44	2.56	10	1
1:A:332:ASP:CG	1:A:336:LYS:NZ	0.44	2.71	2	1
1:A:388:LYS:O	1:A:392:LYS:CE	0.44	2.66	14	2
1:A:401:MET:HE3	1:A:438:ILE:HD12	0.44	1.89	9	2
1:A:357:PRO:HA	1:A:360:HIS:CE1	0.44	2.48	12	1
1:A:415:ILE:HG23	1:A:419:VAL:CG2	0.44	2.43	16	1
1:A:361:HIS:ND1	1:A:361:HIS:C	0.43	2.71	10	2
1:A:362:GLU:O	1:A:363:LEU:C	0.43	2.56	7	7
1:A:358:HIS:O	1:A:361:HIS:CE1	0.43	2.70	11	1
1:A:348:GLU:OE1	1:A:348:GLU:C	0.43	2.57	9	2
1:A:407:ARG:O	1:A:411:GLU:N	0.43	2.51	12	1
1:A:441:LYS:O	1:A:442:GLN:C	0.43	2.56	19	4
1:A:365:TYR:CD1	1:A:365:TYR:C	0.43	2.92	5	4
1:A:365:TYR:CE1	1:A:407:ARG:HB3	0.43	2.48	18	1
1:A:412:ILE:HG13	1:A:423:TYR:CE1	0.43	2.48	17	2
1:A:376:GLY:C	1:A:378:SER:N	0.43	2.71	1	1
1:A:380:PHE:CD1	1:A:380:PHE:C	0.43	2.92	10	7
1:A:358:HIS:O	1:A:361:HIS:NE2	0.43	2.52	11	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:434:PHE:CD2	1:A:435:GLN:NE2	0.43	2.87	10	1
1:A:418:ASP:OD2	1:A:419:VAL:HG22	0.43	2.14	16	1
1:A:362:GLU:C	1:A:366:GLU:OE1	0.42	2.56	6	2
1:A:357:PRO:HA	1:A:360:HIS:CG	0.42	2.49	8	2
1:A:393:SER:O	1:A:394:SER:C	0.42	2.57	13	5
1:A:361:HIS:CE1	1:A:362:GLU:OE2	0.42	2.72	11	1
1:A:344:ILE:O	1:A:347:ALA:N	0.42	2.51	12	1
1:A:391:TRP:HZ2	1:A:398:VAL:HG23	0.42	1.74	12	1
1:A:400:GLN:O	1:A:403:ARG:N	0.42	2.52	20	1
1:A:402:LYS:CG	1:A:403:ARG:N	0.42	2.82	5	5
1:A:396:ILE:HG23	1:A:400:GLN:NE2	0.42	2.29	12	1
1:A:419:VAL:CG2	1:A:422:SER:OG	0.42	2.67	13	1
1:A:402:LYS:HG2	1:A:403:ARG:N	0.42	2.29	19	1
1:A:334:LEU:HD21	1:A:351:LEU:HB2	0.42	1.91	17	1
1:A:399:ASP:C	1:A:401:MET:N	0.42	2.72	1	2
1:A:354:LEU:CB	1:A:356:VAL:HG22	0.42	2.45	12	1
1:A:409:TYR:CE1	1:A:447:CYS:HA	0.42	2.49	1	1
1:A:431:GLU:OE2	1:A:444:ARG:NH2	0.42	2.52	12	1
1:A:381:LYS:O	1:A:382:MET:C	0.42	2.58	18	2
1:A:328:VAL:HG13	1:A:329:LYS:N	0.42	2.30	13	1
1:A:389:SER:O	1:A:392:LYS:N	0.42	2.53	20	1
1:A:351:LEU:CD1	1:A:363:LEU:HD22	0.41	2.45	19	1
1:A:389:SER:O	1:A:393:SER:N	0.41	2.53	3	1
1:A:346:GLU:OE2	1:A:346:GLU:C	0.41	2.59	5	1
1:A:442:GLN:O	1:A:446:LEU:CG	0.41	2.68	8	1
1:A:351:LEU:HD22	1:A:363:LEU:HD22	0.41	1.90	8	1
1:A:401:MET:HE1	1:A:438:ILE:HD12	0.41	1.90	13	1
1:A:359:PHE:O	1:A:360:HIS:C	0.41	2.59	15	1
1:A:388:LYS:HA	1:A:438:ILE:HG21	0.41	1.92	18	1
1:A:429:PHE:CD2	1:A:433:CYS:SG	0.41	3.13	20	1
1:A:413:PRO:O	1:A:416:ASN:CG	0.41	2.59	6	1
1:A:338:TYR:CZ	1:A:386:LEU:HB2	0.41	2.51	5	4
1:A:445:ASP:OD1	1:A:445:ASP:C	0.41	2.58	3	1
1:A:405:TYR:O	1:A:408:ILE:N	0.41	2.54	8	3
1:A:437:GLY:O	1:A:438:ILE:C	0.41	2.59	2	3
1:A:357:PRO:HA	1:A:360:HIS:CD2	0.41	2.51	10	1
1:A:332:ASP:O	1:A:335:LEU:N	0.41	2.52	12	1
1:A:386:LEU:O	1:A:390:LEU:HD23	0.41	2.16	8	1
1:A:376:GLY:O	1:A:377:GLU:C	0.41	2.59	18	1
1:A:443:LEU:O	1:A:444:ARG:C	0.41	2.60	19	1
1:A:445:ASP:OD1	1:A:446:LEU:N	0.40	2.54	3	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:413:PRO:O	1:A:416:ASN:OD1	0.40	2.39	9	1
1:A:442:GLN:O	1:A:446:LEU:HD13	0.40	2.16	10	1
1:A:430:VAL:O	1:A:431:GLU:C	0.40	2.58	15	1
1:A:349:HIS:CE1	1:A:353:GLU:OE2	0.40	2.74	16	1
1:A:354:LEU:HB3	1:A:356:VAL:HG22	0.40	1.92	3	1
1:A:361:HIS:CE1	1:A:362:GLU:HG2	0.40	2.51	3	1
1:A:413:PRO:HA	1:A:416:ASN:ND2	0.40	2.31	6	1
1:A:378:SER:O	1:A:379:THR:C	0.40	2.59	9	1
1:A:362:GLU:OE1	1:A:365:TYR:CD1	0.40	2.73	13	1
1:A:430:VAL:HG21	1:A:447:CYS:SG	0.40	2.55	15	1
1:A:361:HIS:CE1	1:A:362:GLU:OE1	0.40	2.74	15	1
1:A:392:LYS:NZ	1:A:437:GLY:O	0.40	2.54	20	1

6.3 Torsion angles (i)

6.3.1 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 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	121/137 (88%)	94±4 (78±3%)	26±5 (21±4%)	2±1 (1±1%)	16	63
All	All	2420/2740 (88%)	1878 (78%)	510 (21%)	32 (1%)	16	63

All 7 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	398	VAL	16
1	A	400	GLN	5
1	A	378	SER	3
1	A	376	GLY	3
1	A	355	GLU	2
1	A	374	SER	2
1	A	377	GLU	1

6.3.2 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 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	114/125 (91%)	109±1 (96±1%)	5±1 (4±1%)	32	81
All	All	2280/2500 (91%)	2180 (96%)	100 (4%)	32	81

All 32 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)
1	A	421	HIS	12
1	A	392	LYS	11
1	A	414	ASP	6
1	A	391	TRP	6
1	A	358	HIS	5
1	A	365	TYR	5
1	A	399	ASP	5
1	A	418	ASP	4
1	A	329	LYS	3
1	A	330	GLU	3
1	A	440	SER	3
1	A	445	ASP	3
1	A	385	ASP	3
1	A	403	ARG	3
1	A	400	GLN	3
1	A	407	ARG	3
1	A	381	LYS	2
1	A	441	LYS	2
1	A	336	LYS	2
1	A	348	GLU	2
1	A	361	HIS	2
1	A	419	VAL	2
1	A	373	GLU	1
1	A	346	GLU	1
1	A	328	VAL	1
1	A	416	ASN	1
1	A	362	GLU	1
1	A	427	GLU	1
1	A	350	CYS	1

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Mol	Chain	Res	Type	Models (Total)
1	A	397	THR	1
1	A	401	MET	1
1	A	442	GLN	1

6.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

6.5 Carbohydrates (i)

There are no monosaccharides in this entry.

6.6 Ligand geometry (i)

There are no ligands in this entry.

6.7 Other polymers (i)

There are no such molecules in this entry.

6.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

7 Chemical shift validation (i)

No chemical shift data were provided