



Full wwPDB NMR Structure Validation Report ⓘ

Oct 23, 2024 – 10:10 PM EDT

PDB ID : 1XU6
Title : Structure of the C-terminal domain from Trypanosoma brucei Variant Surface Glycoprotein MITat1.2
Authors : Chattopadhyay, A.; Jones, N.G.; Nietlispach, D.; Nielsen, P.R.; Voorheis, H.P.; Mott, H.R.; Carrington, M.
Deposited on : 2004-10-25

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 : 20231227.v01 (using entries in the PDB archive December 27th 2023)
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) : 2.39

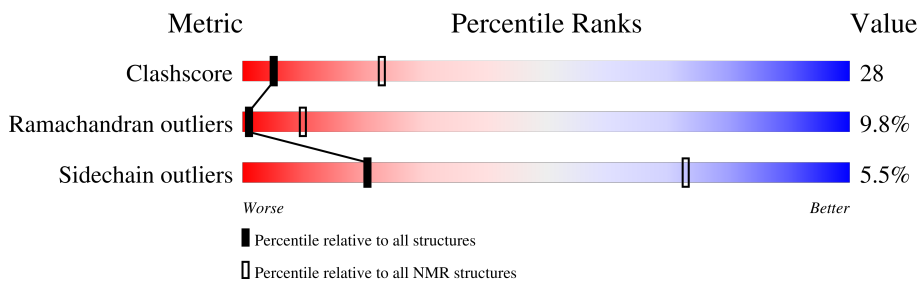
1 Overall quality at a glance

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	210492	14027
Ramachandran outliers	207382	12486
Sidechain outliers	206894	12463

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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	80	

2 Ensemble composition and analysis i

This entry contains 60 models. Model 35 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative.

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:376-A:412 (37)	0.56	35

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 5 clusters and 3 single-model clusters were found.

Cluster number	Models
1	1, 4, 6, 10, 11, 14, 16, 25, 26, 29, 30, 31, 33, 34, 35, 36, 37, 44, 49, 59, 60
2	2, 3, 7, 8, 12, 13, 17, 18, 19, 24, 32, 42, 45, 48, 51, 53, 56, 57
3	9, 20, 23, 27, 28, 38, 40, 41, 50, 52, 54, 55
4	22, 39, 43, 46
5	5, 15
Single-model clusters	21; 47; 58

3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 1188 atoms, of which 581 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Variant surface glycoprotein MITAT 1.2.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	80	1188	357	581	111	134	5	0

There are 5 discrepancies between the modelled and reference sequences:

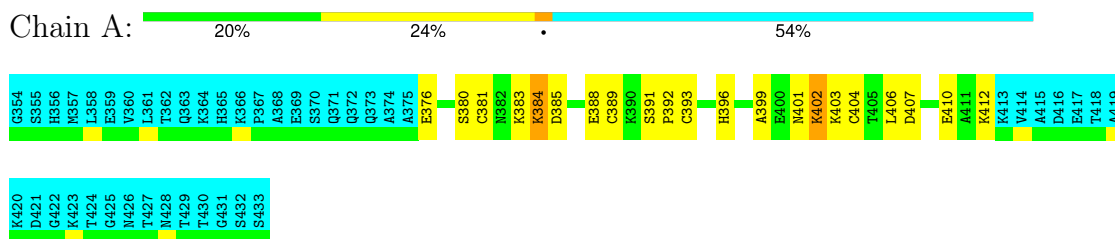
Chain	Residue	Modelled	Actual	Comment	Reference
A	354	GLY	-	cloning artifact	UNP P26332
A	355	SER	-	cloning artifact	UNP P26332
A	356	HIS	-	cloning artifact	UNP P26332
A	357	MET	-	cloning artifact	UNP P26332
A	358	LEU	-	cloning artifact	UNP P26332

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: Variant surface glycoprotein MITAT 1.2

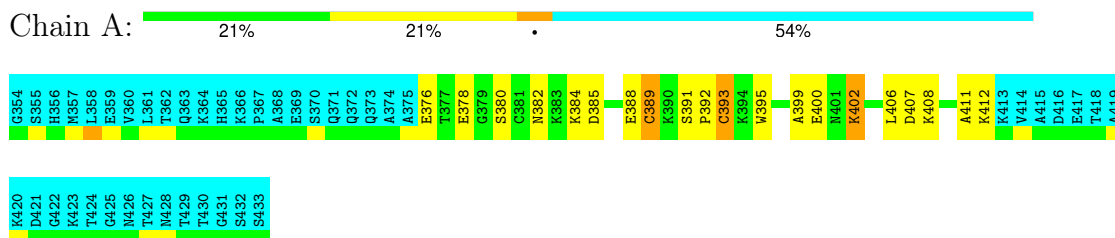


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

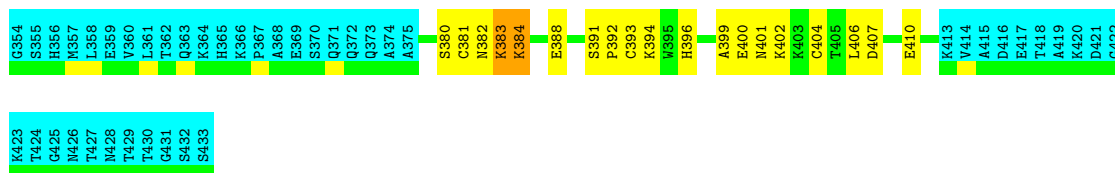
- Molecule 1: Variant surface glycoprotein MITAT 1.2



4.2.2 Score per residue for model 2

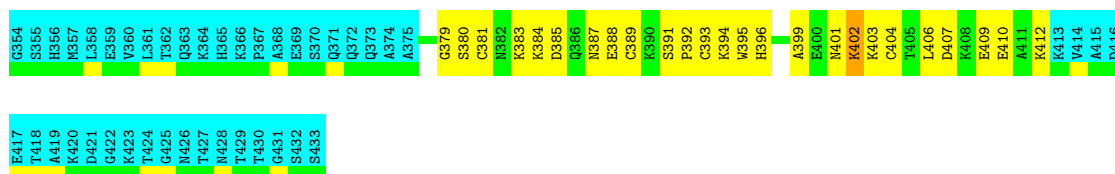
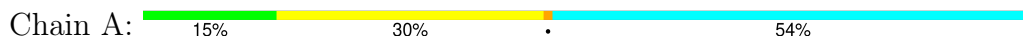
- Molecule 1: Variant surface glycoprotein MITAT 1.2





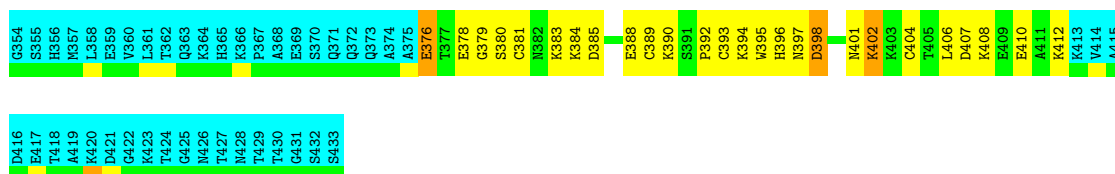
4.2.3 Score per residue for model 3

- Molecule 1: Variant surface glycoprotein MITAT 1.2



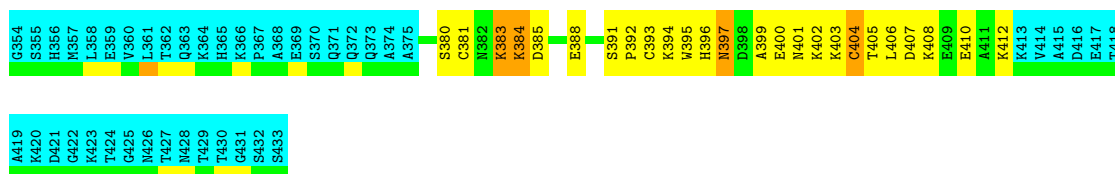
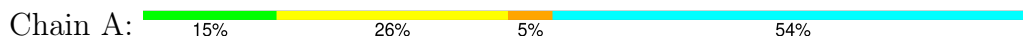
4.2.4 Score per residue for model 4

- Molecule 1: Variant surface glycoprotein MITAT 1.2



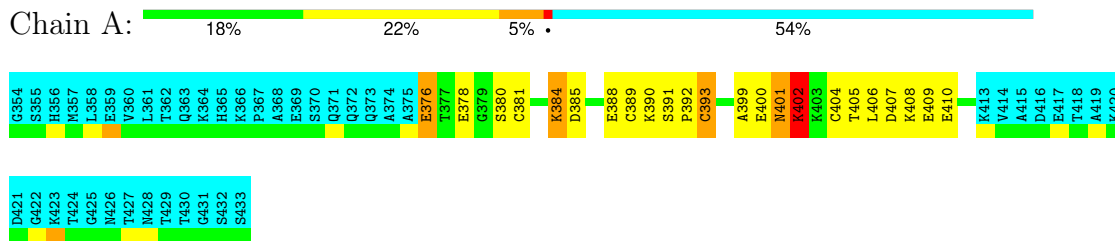
4.2.5 Score per residue for model 5

- Molecule 1: Variant surface glycoprotein MITAT 1.2



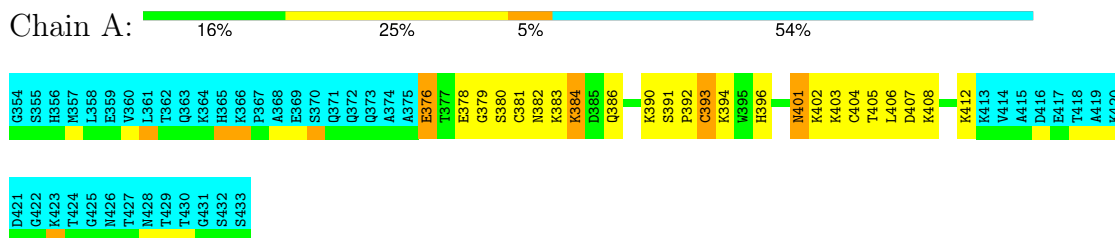
4.2.6 Score per residue for model 6

- Molecule 1: Variant surface glycoprotein MITAT 1.2



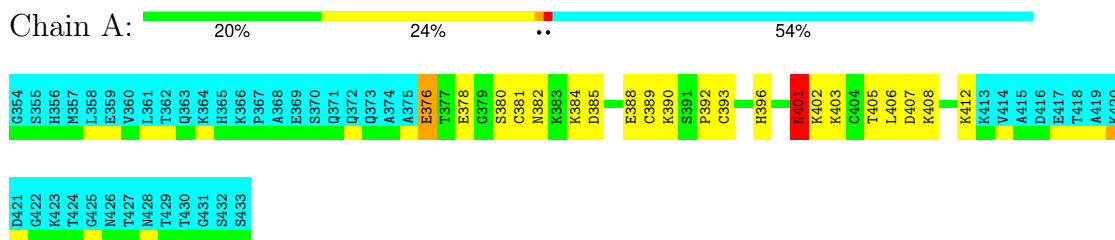
4.2.7 Score per residue for model 7

- Molecule 1: Variant surface glycoprotein MITAT 1.2



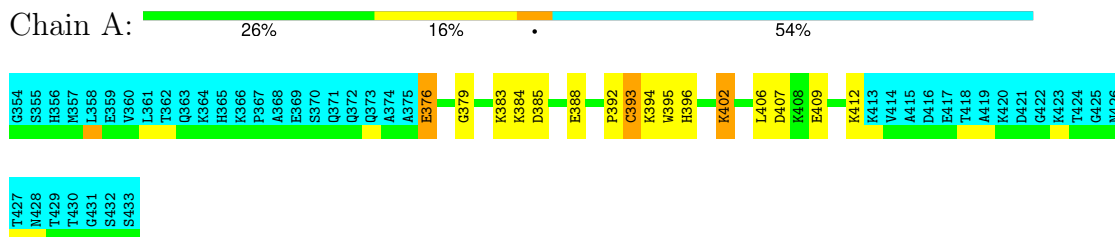
4.2.8 Score per residue for model 8

- Molecule 1: Variant surface glycoprotein MITAT 1.2



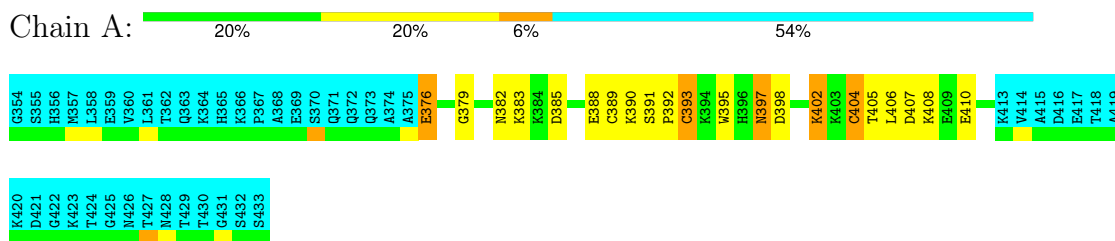
4.2.9 Score per residue for model 9

- Molecule 1: Variant surface glycoprotein MITAT 1.2



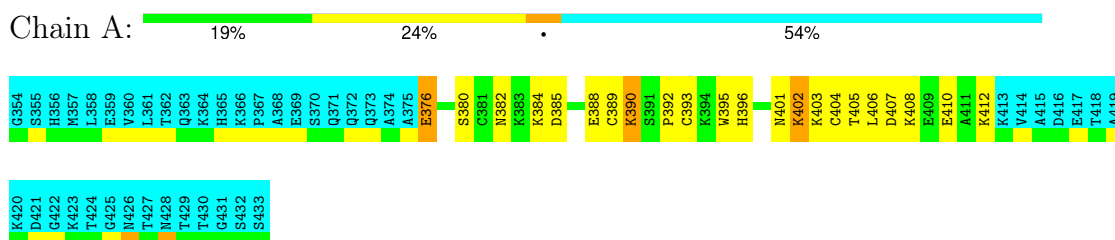
4.2.10 Score per residue for model 10

- Molecule 1: Variant surface glycoprotein MITAT 1.2



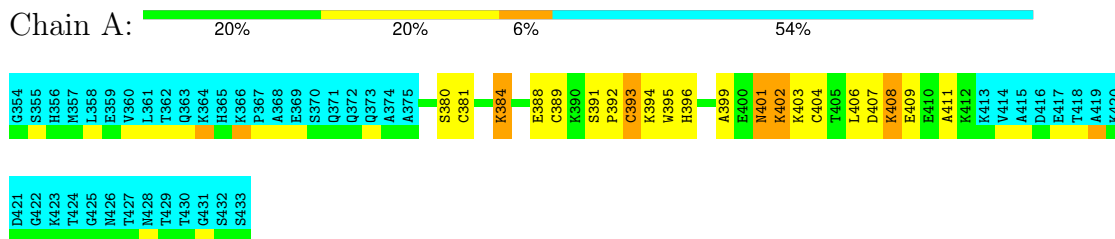
4.2.11 Score per residue for model 11

- Molecule 1: Variant surface glycoprotein MITAT 1.2



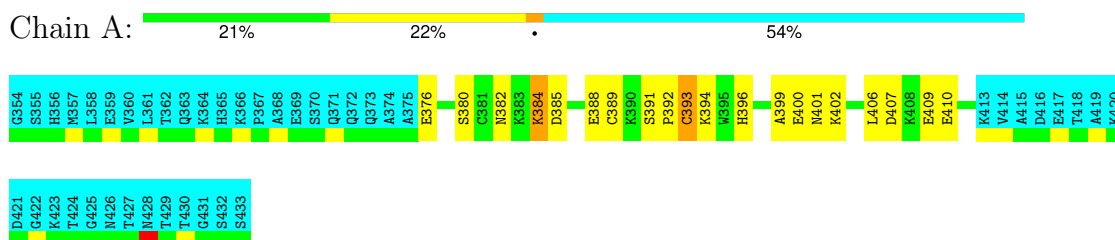
4.2.12 Score per residue for model 12

- Molecule 1: Variant surface glycoprotein MITAT 1.2



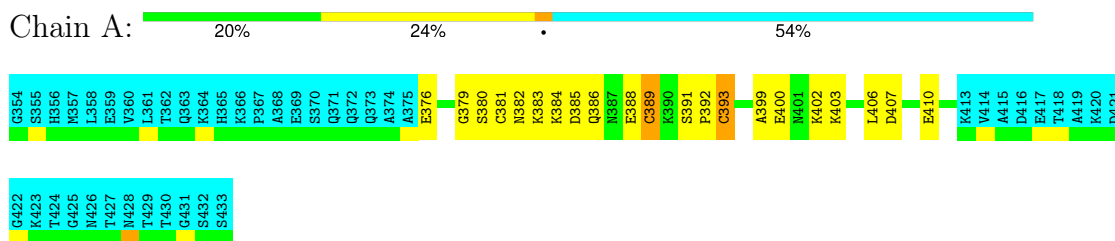
4.2.13 Score per residue for model 13

- Molecule 1: Variant surface glycoprotein MITAT 1.2



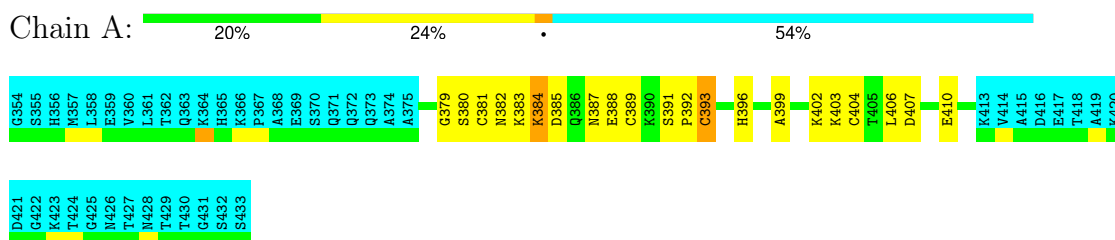
4.2.14 Score per residue for model 14

- Molecule 1: Variant surface glycoprotein MITAT 1.2



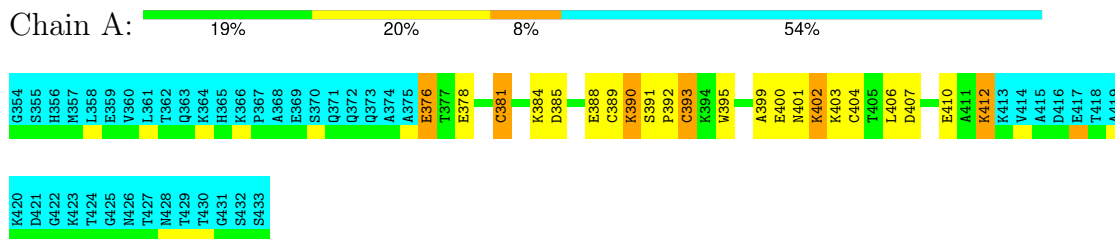
4.2.15 Score per residue for model 15

- Molecule 1: Variant surface glycoprotein MITAT 1.2



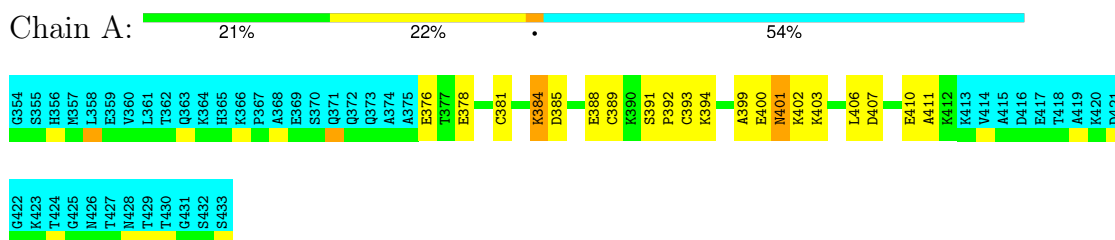
4.2.16 Score per residue for model 16

- Molecule 1: Variant surface glycoprotein MITAT 1.2



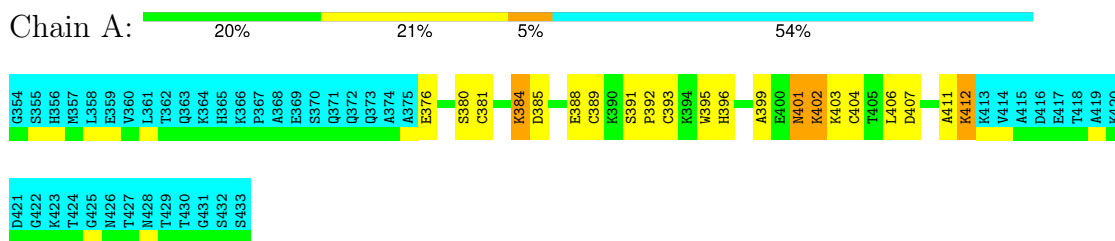
4.2.17 Score per residue for model 17

- Molecule 1: Variant surface glycoprotein MITAT 1.2



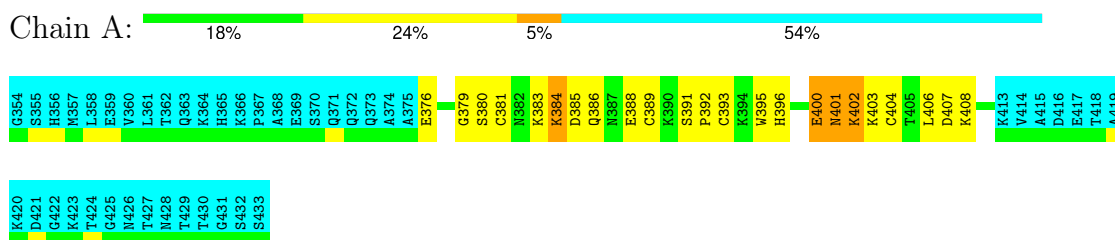
4.2.18 Score per residue for model 18

- Molecule 1: Variant surface glycoprotein MITAT 1.2



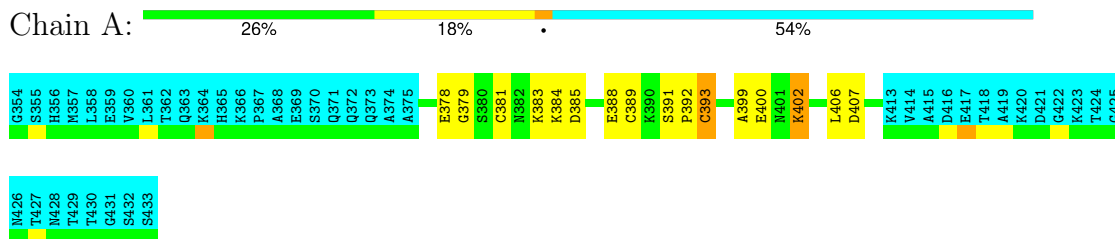
4.2.19 Score per residue for model 19

- Molecule 1: Variant surface glycoprotein MITAT 1.2



4.2.20 Score per residue for model 20

- Molecule 1: Variant surface glycoprotein MITAT 1.2



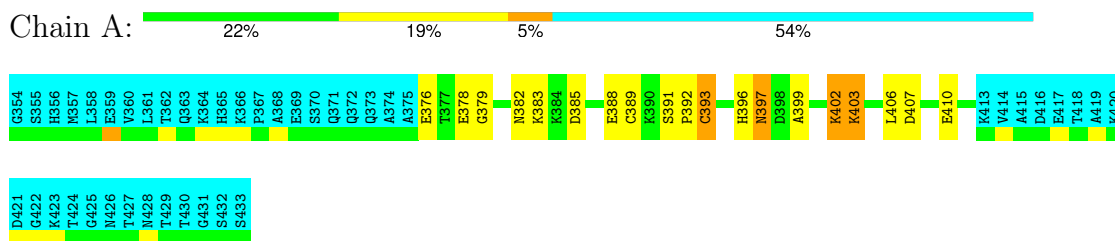
4.2.21 Score per residue for model 21

- Molecule 1: Variant surface glycoprotein MITAT 1.2



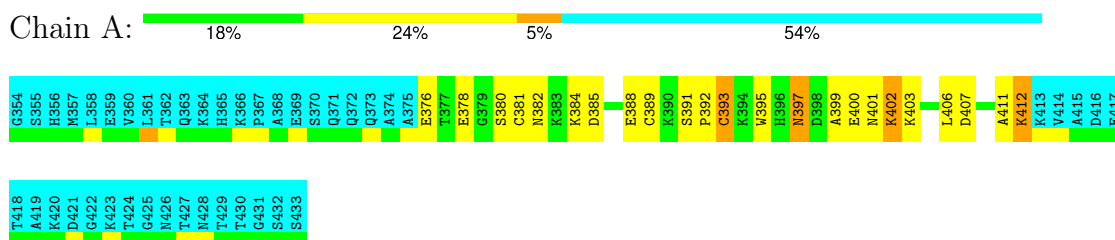
4.2.22 Score per residue for model 22

- Molecule 1: Variant surface glycoprotein MITAT 1.2



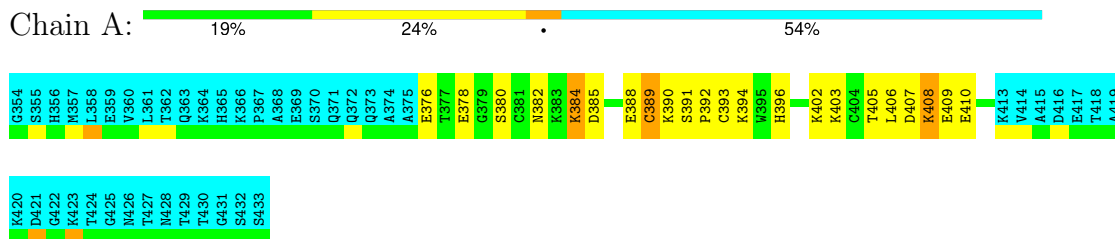
4.2.23 Score per residue for model 23

- Molecule 1: Variant surface glycoprotein MITAT 1.2



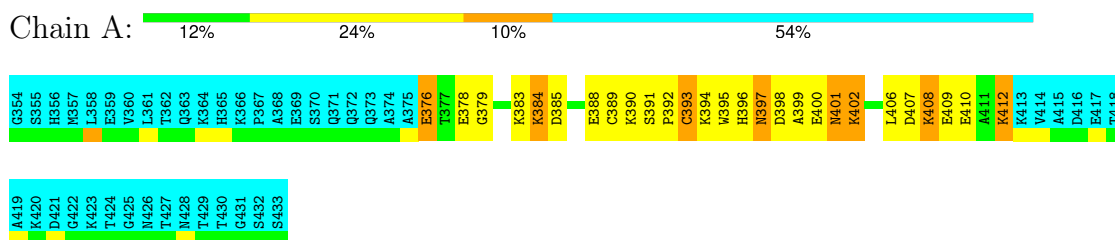
4.2.24 Score per residue for model 24

- Molecule 1: Variant surface glycoprotein MITAT 1.2



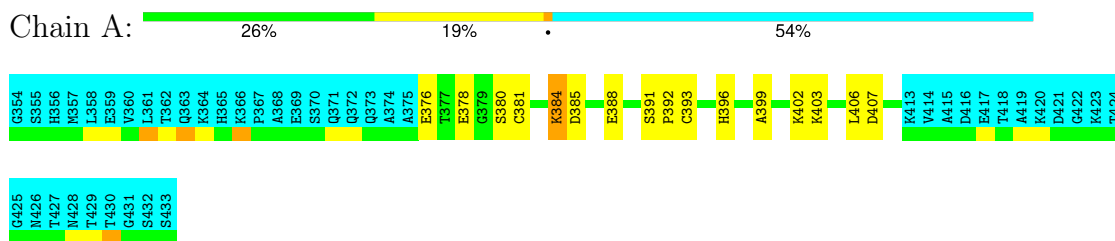
4.2.25 Score per residue for model 25

- Molecule 1: Variant surface glycoprotein MITAT 1.2



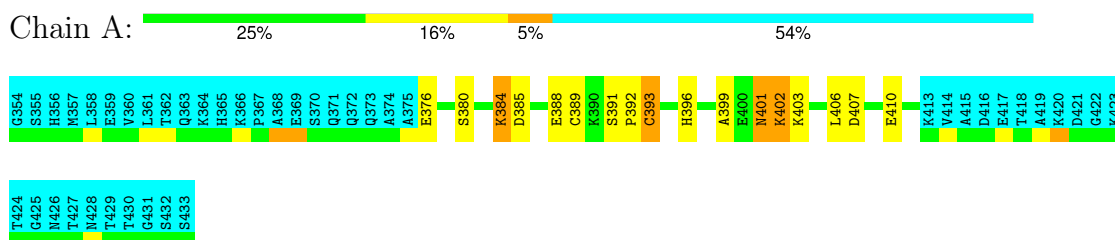
4.2.26 Score per residue for model 26

- Molecule 1: Variant surface glycoprotein MITAT 1.2



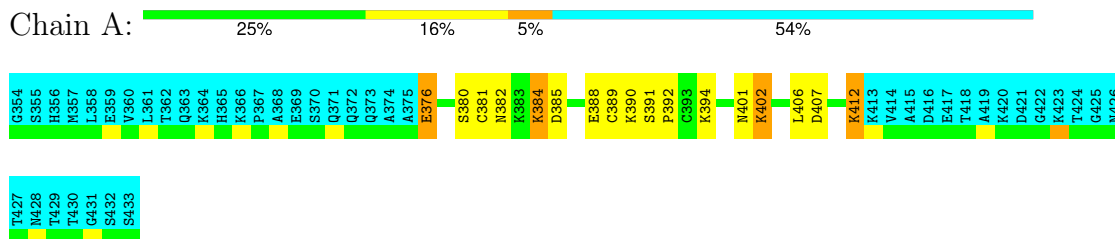
4.2.27 Score per residue for model 27

- Molecule 1: Variant surface glycoprotein MITAT 1.2



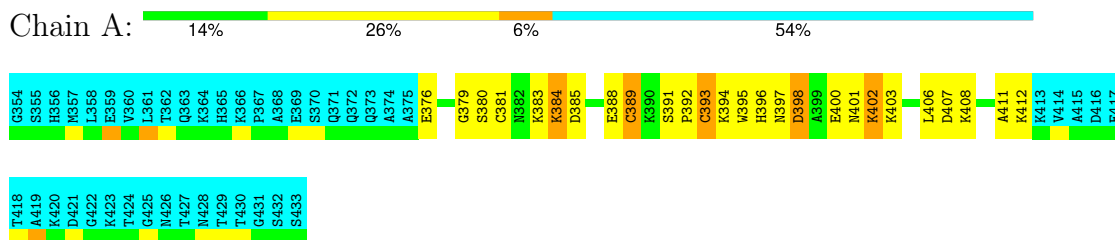
4.2.28 Score per residue for model 28

- Molecule 1: Variant surface glycoprotein MITAT 1.2



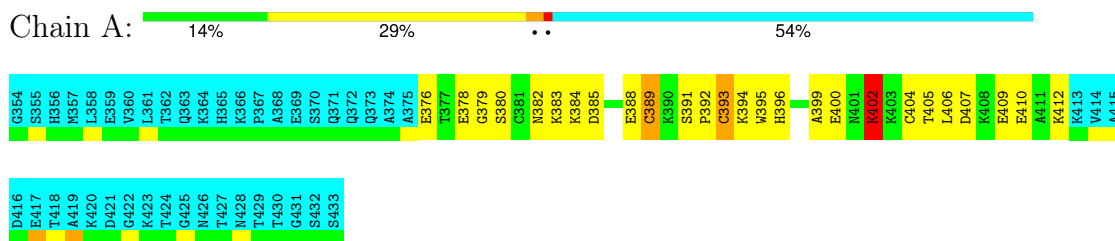
4.2.29 Score per residue for model 29

- Molecule 1: Variant surface glycoprotein MITAT 1.2



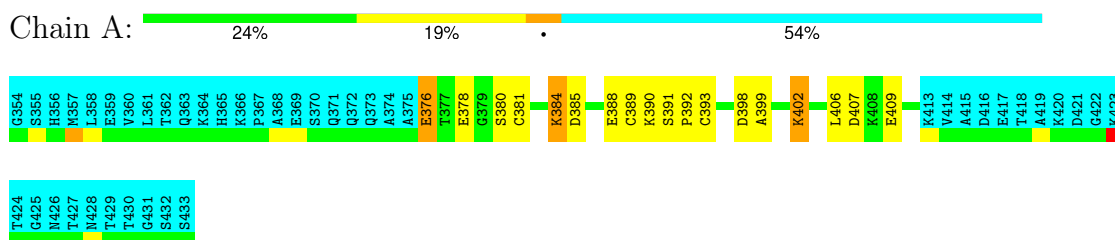
4.2.30 Score per residue for model 30

- Molecule 1: Variant surface glycoprotein MITAT 1.2



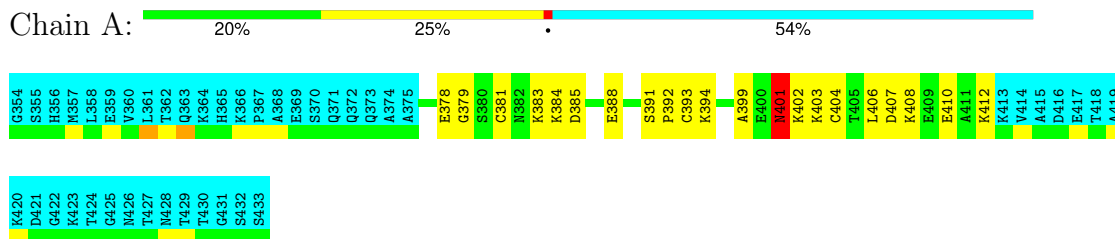
4.2.31 Score per residue for model 31

- Molecule 1: Variant surface glycoprotein MITAT 1.2



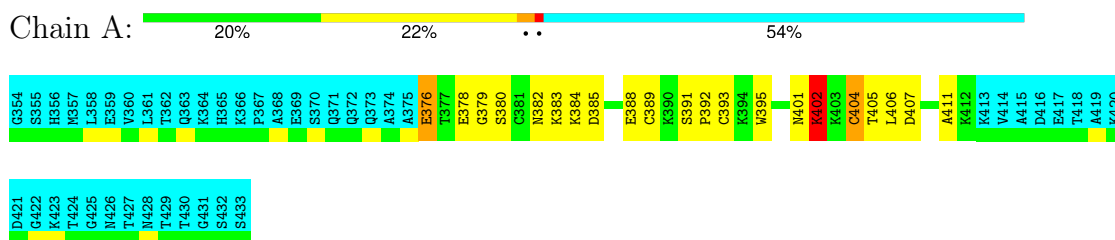
4.2.32 Score per residue for model 32

- Molecule 1: Variant surface glycoprotein MITAT 1.2



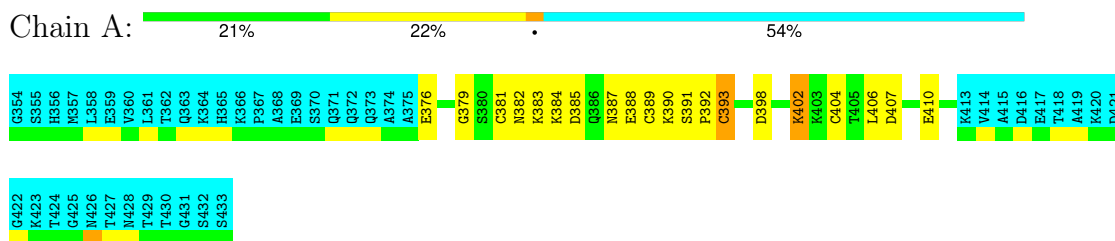
4.2.33 Score per residue for model 33

- Molecule 1: Variant surface glycoprotein MITAT 1.2



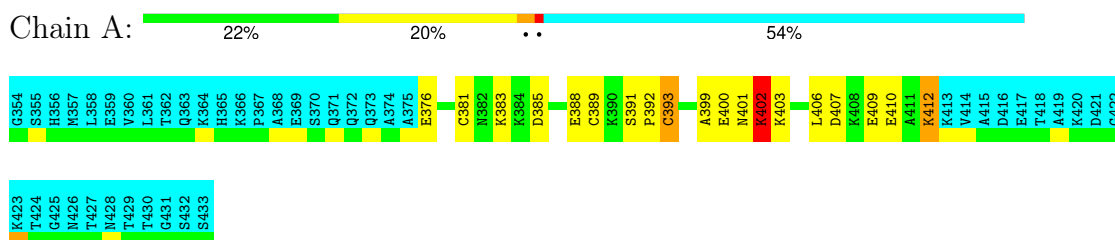
4.2.34 Score per residue for model 34

- Molecule 1: Variant surface glycoprotein MITAT 1.2



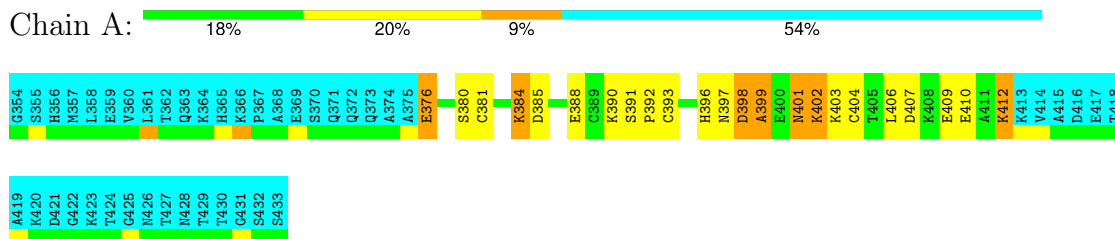
4.2.35 Score per residue for model 35 (medoid)

- Molecule 1: Variant surface glycoprotein MITAT 1.2



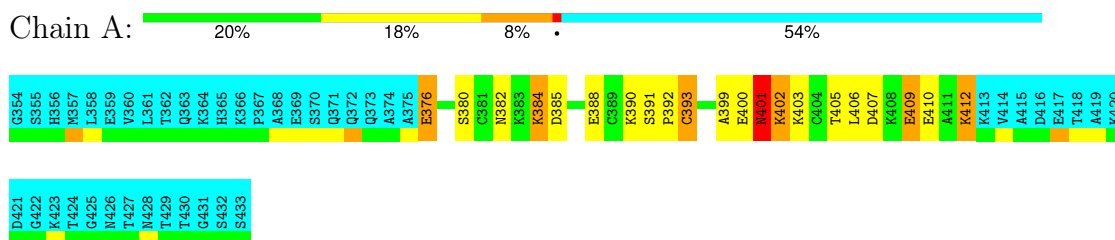
4.2.36 Score per residue for model 36

- Molecule 1: Variant surface glycoprotein MITAT 1.2



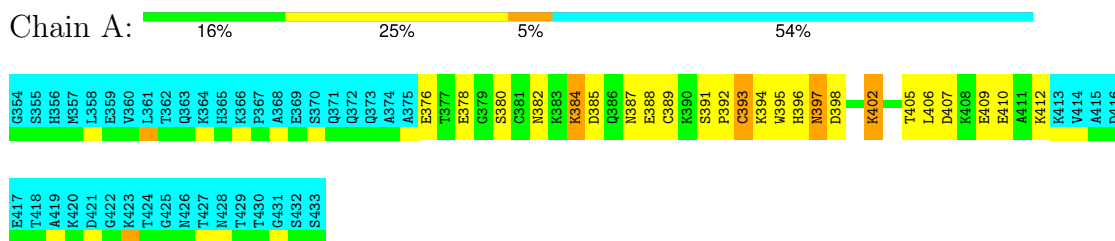
4.2.37 Score per residue for model 37

- Molecule 1: Variant surface glycoprotein MITAT 1.2



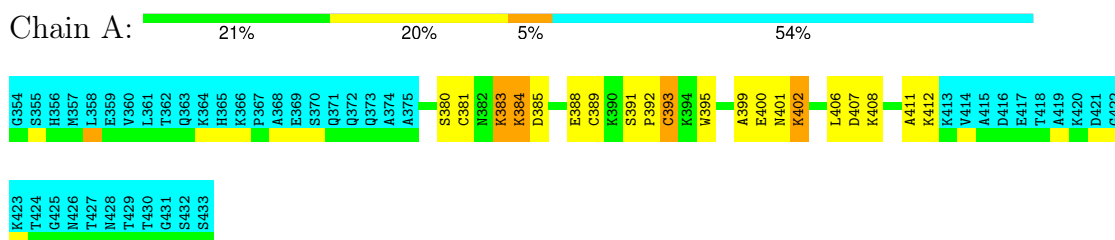
4.2.38 Score per residue for model 38

- Molecule 1: Variant surface glycoprotein MITAT 1.2



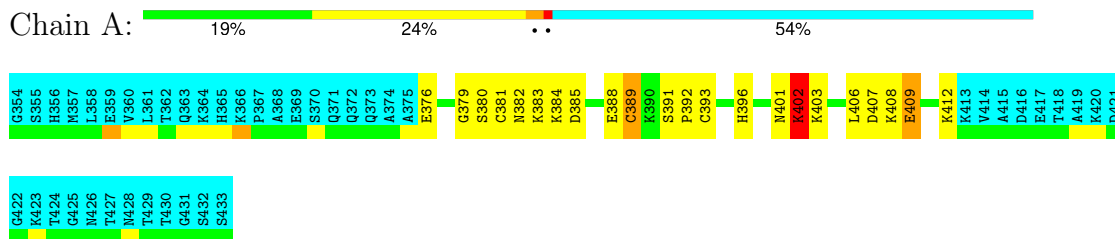
4.2.39 Score per residue for model 39

- Molecule 1: Variant surface glycoprotein MITAT 1.2



4.2.40 Score per residue for model 40

- Molecule 1: Variant surface glycoprotein MITAT 1.2



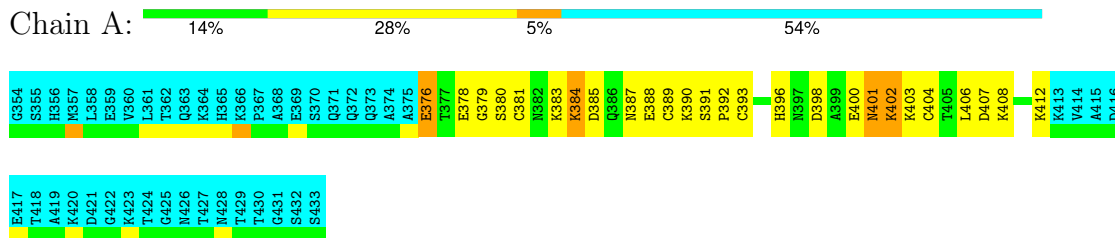
4.2.41 Score per residue for model 41

- Molecule 1: Variant surface glycoprotein MITAT 1.2



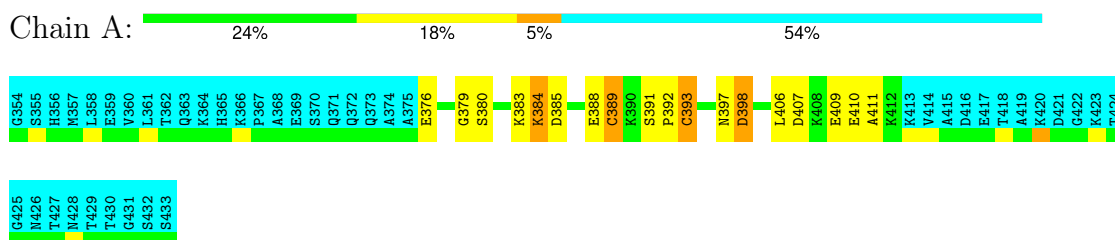
4.2.42 Score per residue for model 42

- Molecule 1: Variant surface glycoprotein MITAT 1.2



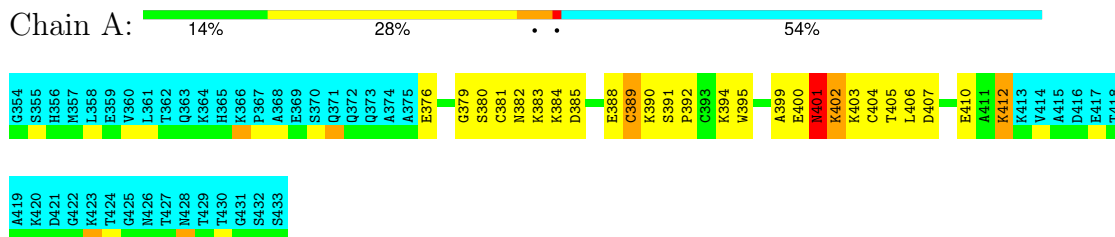
4.2.43 Score per residue for model 43

- Molecule 1: Variant surface glycoprotein MITAT 1.2



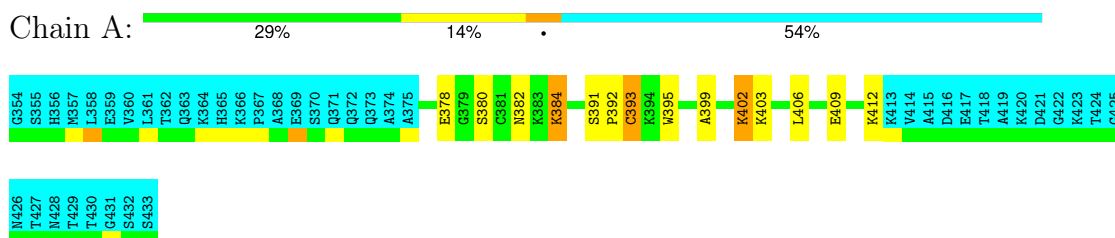
4.2.44 Score per residue for model 44

- Molecule 1: Variant surface glycoprotein MITAT 1.2



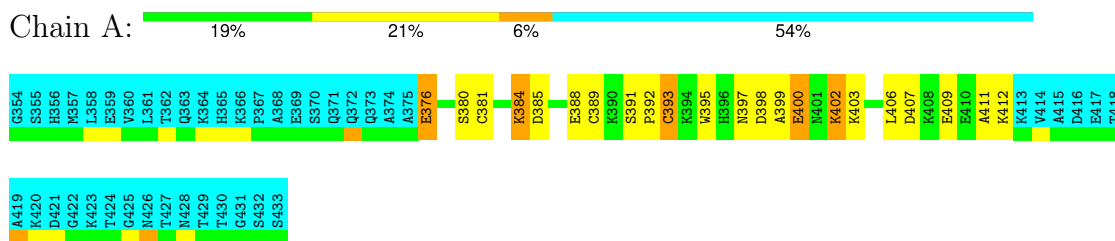
4.2.45 Score per residue for model 45

- Molecule 1: Variant surface glycoprotein MITAT 1.2



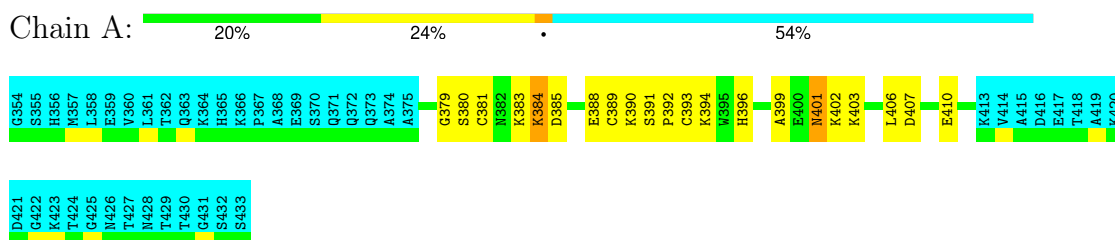
4.2.46 Score per residue for model 46

- Molecule 1: Variant surface glycoprotein MITAT 1.2



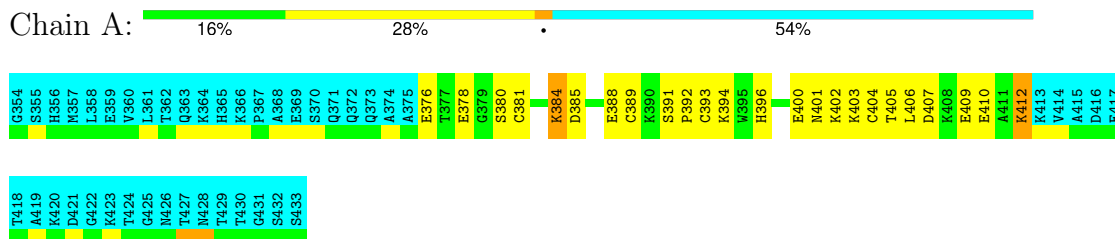
4.2.47 Score per residue for model 47

- Molecule 1: Variant surface glycoprotein MITAT 1.2



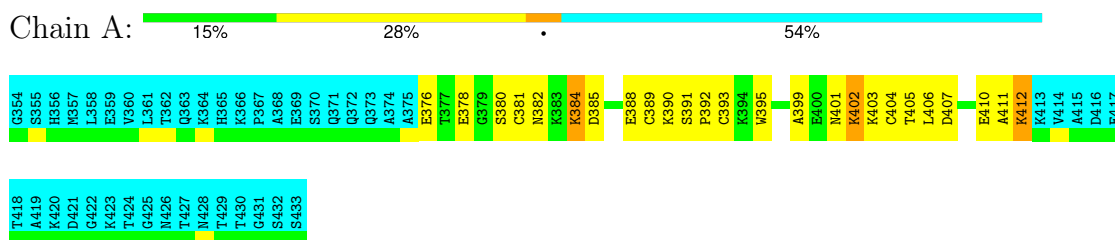
4.2.48 Score per residue for model 48

- Molecule 1: Variant surface glycoprotein MITAT 1.2



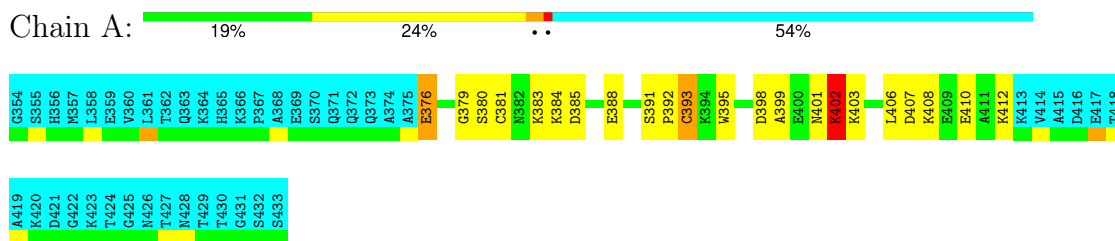
4.2.49 Score per residue for model 49

- Molecule 1: Variant surface glycoprotein MITAT 1.2



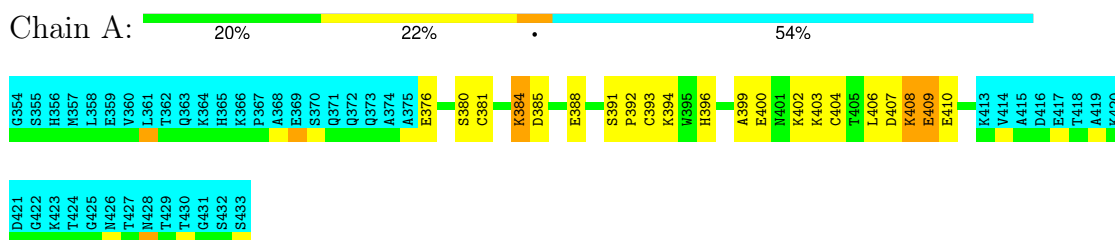
4.2.50 Score per residue for model 50

- Molecule 1: Variant surface glycoprotein MITAT 1.2



4.2.51 Score per residue for model 51

- Molecule 1: Variant surface glycoprotein MITAT 1.2



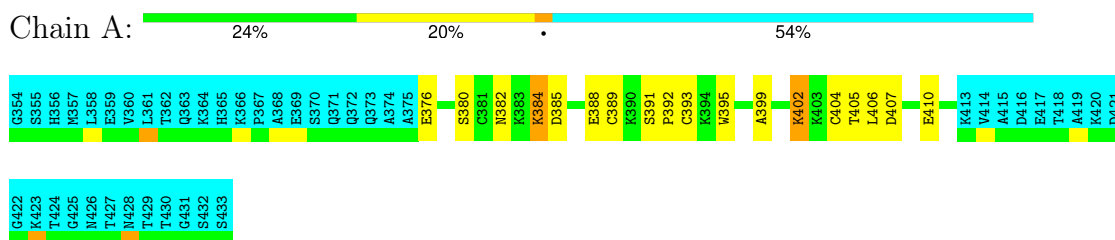
4.2.52 Score per residue for model 52

- Molecule 1: Variant surface glycoprotein MITAT 1.2



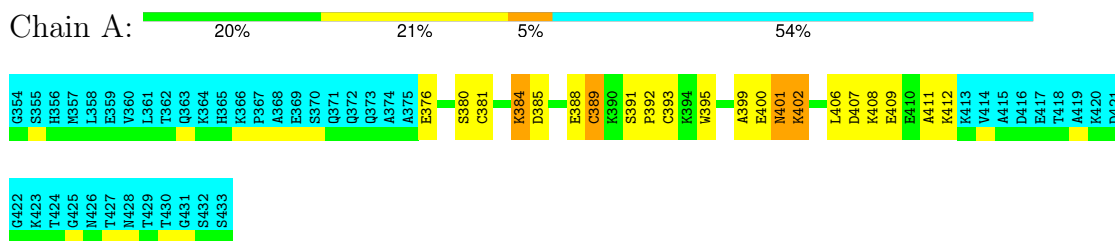
4.2.53 Score per residue for model 53

- Molecule 1: Variant surface glycoprotein MITAT 1.2



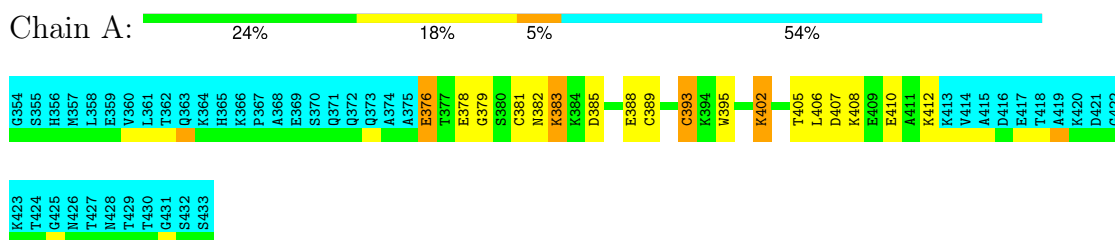
4.2.54 Score per residue for model 54

- Molecule 1: Variant surface glycoprotein MITAT 1.2



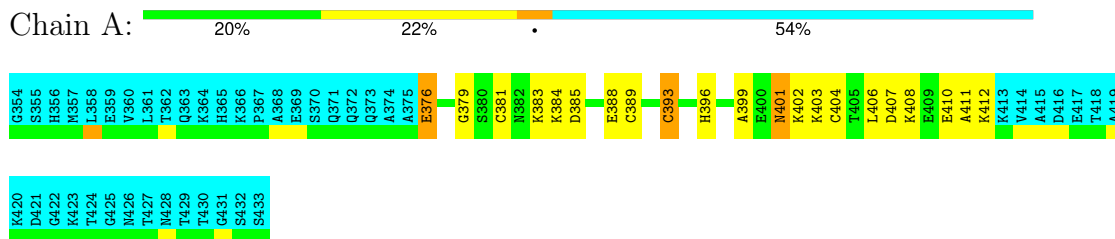
4.2.55 Score per residue for model 55

- Molecule 1: Variant surface glycoprotein MITAT 1.2



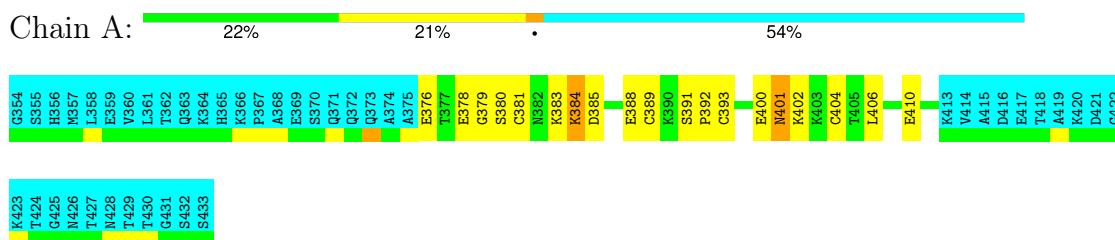
4.2.56 Score per residue for model 56

- Molecule 1: Variant surface glycoprotein MITAT 1.2



4.2.57 Score per residue for model 57

- Molecule 1: Variant surface glycoprotein MITAT 1.2



5 Refinement protocol and experimental data overview

The models were refined using the following method: *TORSION ANGLE DYNAMICS, SIMULATED ANNEALING*.

Of the 100 calculated structures, 60 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
ARIA	refinement	1.1
Azara	structure solution	2.7
ANSIG	structure solution	3.3
CNS	structure solution	1.1
ARIA	structure solution	1.1

No chemical shift data was provided.

6 Model quality

6.1 Standard geometry

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

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	294	273	272	16±3
All	All	17640	16380	16320	964

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 28.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:396:HIS:HB2	1:A:403:LYS:HB2	0.78	1.56	26	19
1:A:406:LEU:HD13	1:A:407:ASP:N	0.72	2.00	42	55
1:A:381:CYS:SG	1:A:404:CYS:HB3	0.72	2.24	5	1
1:A:385:ASP:H	1:A:388:GLU:HB2	0.70	1.46	50	32
1:A:399:ALA:HB1	1:A:403:LYS:HE2	0.67	1.66	45	3
1:A:393:CYS:HA	1:A:406:LEU:HA	0.65	1.68	6	51
1:A:401:ASN:HD21	1:A:403:LYS:HE3	0.64	1.51	44	1
1:A:390:LYS:HA	1:A:390:LYS:HE3	0.63	1.69	11	2
1:A:399:ALA:HB1	1:A:403:LYS:NZ	0.63	2.08	35	1
1:A:390:LYS:HA	1:A:390:LYS:HE2	0.62	1.70	6	2
1:A:381:CYS:SG	1:A:406:LEU:HD23	0.60	2.36	42	16
1:A:412:LYS:NZ	1:A:412:LYS:HB2	0.60	2.11	28	8
1:A:392:PRO:HB2	1:A:406:LEU:HD21	0.60	1.74	5	17
1:A:380:SER:O	1:A:384:LYS:HD2	0.60	1.96	18	29

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:376:GLU:HG3	1:A:390:LYS:HG3	0.59	1.74	21	2
1:A:380:SER:O	1:A:384:LYS:HG2	0.58	1.99	14	18
1:A:381:CYS:HA	1:A:384:LYS:HG2	0.58	1.75	16	2
1:A:376:GLU:HG3	1:A:392:PRO:HG2	0.58	1.76	58	1
1:A:376:GLU:HG3	1:A:390:LYS:HD2	0.57	1.76	42	9
1:A:385:ASP:N	1:A:388:GLU:HB2	0.57	2.15	14	40
1:A:376:GLU:HG3	1:A:390:LYS:HD3	0.57	1.74	8	1
1:A:385:ASP:O	1:A:389:CYS:N	0.57	2.37	19	31
1:A:408:LYS:HD2	1:A:409:GLU:N	0.57	2.15	12	2
1:A:379:GLY:O	1:A:383:LYS:HD3	0.57	1.98	55	1
1:A:378:GLU:N	1:A:406:LEU:HD22	0.57	2.15	45	2
1:A:381:CYS:HB3	1:A:404:CYS:O	0.57	2.00	12	8
1:A:399:ALA:HB1	1:A:403:LYS:HE3	0.56	1.77	32	3
1:A:381:CYS:SG	1:A:404:CYS:SG	0.56	3.04	21	3
1:A:384:LYS:HE3	1:A:388:GLU:HB3	0.56	1.78	41	5
1:A:409:GLU:O	1:A:412:LYS:HG2	0.56	2.01	59	8
1:A:409:GLU:HA	1:A:412:LYS:HE3	0.56	1.78	9	2
1:A:394:LYS:HB2	1:A:394:LYS:NZ	0.55	2.16	28	2
1:A:387:ASN:HD22	1:A:388:GLU:N	0.55	1.99	60	1
1:A:395:TRP:HE3	1:A:404:CYS:SG	0.55	2.23	10	3
1:A:408:LYS:NZ	1:A:408:LYS:HB2	0.55	2.17	54	1
1:A:391:SER:HB2	1:A:392:PRO:HD3	0.54	1.78	57	2
1:A:407:ASP:CG	1:A:410:GLU:HB2	0.54	2.23	59	2
1:A:391:SER:N	1:A:392:PRO:HD2	0.54	2.16	44	47
1:A:378:GLU:HA	1:A:406:LEU:HB3	0.54	1.79	48	7
1:A:387:ASN:HD22	1:A:388:GLU:H	0.54	1.43	60	1
1:A:395:TRP:HA	1:A:404:CYS:SG	0.54	2.43	33	3
1:A:382:ASN:ND2	1:A:405:THR:HG22	0.54	2.18	41	13
1:A:403:LYS:HB3	1:A:403:LYS:NZ	0.54	2.18	23	2
1:A:381:CYS:SG	1:A:406:LEU:HB2	0.54	2.43	47	26
1:A:384:LYS:HD3	1:A:388:GLU:HB3	0.53	1.80	30	9
1:A:403:LYS:NZ	1:A:403:LYS:HB3	0.53	2.18	22	3
1:A:407:ASP:OD1	1:A:410:GLU:HB3	0.53	2.03	36	1
1:A:399:ALA:HB1	1:A:403:LYS:HD3	0.53	1.81	58	1
1:A:376:GLU:OE2	1:A:390:LYS:HG3	0.52	2.04	11	2
1:A:391:SER:HB3	1:A:392:PRO:HD3	0.52	1.81	58	4
1:A:394:LYS:HG3	1:A:407:ASP:HB2	0.52	1.79	17	3
1:A:399:ALA:HB1	1:A:403:LYS:HG3	0.52	1.82	47	6
1:A:379:GLY:O	1:A:383:LYS:HG2	0.52	2.05	32	24
1:A:408:LYS:NZ	1:A:408:LYS:HB3	0.52	2.19	56	1
1:A:401:ASN:ND2	1:A:403:LYS:HE3	0.51	2.20	44	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:384:LYS:HG3	1:A:388:GLU:HB3	0.51	1.82	21	15
1:A:376:GLU:HB3	1:A:392:PRO:HB3	0.51	1.80	46	2
1:A:409:GLU:HA	1:A:412:LYS:HE2	0.51	1.82	3	1
1:A:396:HIS:HB3	1:A:403:LYS:O	0.51	2.05	5	2
1:A:394:LYS:HE3	1:A:407:ASP:HB2	0.51	1.82	32	3
1:A:397:ASN:O	1:A:398:ASP:HB2	0.51	2.06	36	2
1:A:390:LYS:HE3	1:A:390:LYS:HA	0.50	1.83	58	1
1:A:400:GLU:HG2	1:A:403:LYS:HZ1	0.50	1.67	5	1
1:A:383:LYS:NZ	1:A:383:LYS:HB3	0.49	2.22	5	2
1:A:399:ALA:HB1	1:A:403:LYS:HZ3	0.49	1.64	35	1
1:A:400:GLU:O	1:A:401:ASN:HB2	0.49	2.07	57	6
1:A:378:GLU:HA	1:A:406:LEU:CB	0.49	2.36	20	25
1:A:393:CYS:SG	1:A:404:CYS:SG	0.49	3.10	21	2
1:A:384:LYS:CE	1:A:388:GLU:HB3	0.49	2.38	41	7
1:A:384:LYS:HD2	1:A:384:LYS:N	0.49	2.22	15	18
1:A:408:LYS:N	1:A:408:LYS:HD2	0.49	2.23	10	3
1:A:408:LYS:O	1:A:412:LYS:HG3	0.49	2.08	1	12
1:A:407:ASP:CG	1:A:410:GLU:HB3	0.49	2.27	36	1
1:A:395:TRP:CH2	1:A:402:LYS:HB3	0.48	2.44	19	19
1:A:408:LYS:HB3	1:A:408:LYS:NZ	0.48	2.24	41	1
1:A:397:ASN:O	1:A:398:ASP:HB3	0.48	2.08	4	3
1:A:376:GLU:HB3	1:A:380:SER:OG	0.48	2.09	52	5
1:A:399:ALA:HB1	1:A:403:LYS:HG2	0.48	1.84	27	3
1:A:384:LYS:HE2	1:A:384:LYS:HA	0.48	1.84	46	1
1:A:382:ASN:HD22	1:A:382:ASN:N	0.48	2.07	15	9
1:A:399:ALA:HB3	1:A:403:LYS:HB2	0.48	1.84	58	1
1:A:382:ASN:HA	1:A:404:CYS:O	0.48	2.09	52	6
1:A:403:LYS:O	1:A:403:LYS:HD2	0.48	2.08	46	1
1:A:394:LYS:HZ2	1:A:394:LYS:HB3	0.48	1.69	60	1
1:A:408:LYS:HD2	1:A:408:LYS:N	0.48	2.24	24	1
1:A:393:CYS:HB3	1:A:404:CYS:SG	0.48	2.49	15	12
1:A:383:LYS:HB3	1:A:383:LYS:NZ	0.47	2.24	39	4
1:A:406:LEU:HD22	1:A:407:ASP:H	0.47	1.69	20	1
1:A:382:ASN:ND2	1:A:405:THR:HA	0.47	2.24	24	4
1:A:384:LYS:HD2	1:A:390:LYS:NZ	0.47	2.24	47	1
1:A:395:TRP:CZ2	1:A:402:LYS:HB3	0.47	2.45	10	7
1:A:397:ASN:HD22	1:A:398:ASP:N	0.47	2.08	25	1
1:A:394:LYS:HE2	1:A:396:HIS:CE1	0.47	2.45	38	3
1:A:392:PRO:O	1:A:410:GLU:HB2	0.47	2.10	49	2
1:A:407:ASP:OD1	1:A:410:GLU:HB2	0.47	2.10	4	2
1:A:392:PRO:HB2	1:A:406:LEU:CD2	0.46	2.40	13	30

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:397:ASN:HD22	1:A:397:ASN:N	0.46	2.08	10	4
1:A:384:LYS:HE2	1:A:384:LYS:CA	0.46	2.40	46	1
1:A:394:LYS:HE3	1:A:396:HIS:NE2	0.46	2.25	51	4
1:A:402:LYS:N	1:A:402:LYS:HD2	0.46	2.25	10	5
1:A:400:GLU:N	1:A:400:GLU:OE1	0.46	2.48	19	2
1:A:384:LYS:HE3	1:A:384:LYS:HA	0.46	1.88	2	20
1:A:392:PRO:O	1:A:406:LEU:HD22	0.46	2.11	4	2
1:A:389:CYS:SG	1:A:393:CYS:HB2	0.46	2.50	10	1
1:A:403:LYS:HZ3	1:A:403:LYS:HB3	0.46	1.70	60	1
1:A:402:LYS:HD2	1:A:402:LYS:N	0.46	2.26	49	8
1:A:394:LYS:HB3	1:A:394:LYS:NZ	0.46	2.26	60	2
1:A:392:PRO:O	1:A:407:ASP:OD1	0.46	2.34	36	3
1:A:394:LYS:HZ2	1:A:394:LYS:CB	0.46	2.24	60	2
1:A:397:ASN:ND2	1:A:397:ASN:H	0.46	2.08	38	2
1:A:393:CYS:SG	1:A:405:THR:C	0.45	2.94	21	3
1:A:406:LEU:HD11	1:A:411:ALA:HB2	0.45	1.88	17	3
1:A:392:PRO:C	1:A:406:LEU:HD12	0.45	2.32	45	2
1:A:399:ALA:CB	1:A:403:LYS:HG2	0.45	2.41	60	3
1:A:382:ASN:N	1:A:382:ASN:ND2	0.45	2.64	15	5
1:A:397:ASN:N	1:A:397:ASN:HD22	0.45	2.09	23	1
1:A:402:LYS:N	1:A:402:LYS:HD3	0.45	2.27	30	2
1:A:385:ASP:CG	1:A:386:GLN:H	0.45	2.15	14	2
1:A:390:LYS:O	1:A:393:CYS:HB2	0.45	2.11	16	1
1:A:399:ALA:C	1:A:401:ASN:H	0.45	2.15	37	3
1:A:394:LYS:HE2	1:A:396:HIS:NE2	0.44	2.27	24	1
1:A:384:LYS:HE2	1:A:388:GLU:O	0.44	2.12	3	2
1:A:402:LYS:HD3	1:A:402:LYS:N	0.44	2.27	33	4
1:A:400:GLU:O	1:A:401:ASN:CB	0.44	2.65	57	1
1:A:399:ALA:HB3	1:A:402:LYS:CA	0.44	2.42	22	4
1:A:395:TRP:HH2	1:A:402:LYS:HB3	0.44	1.71	55	2
1:A:400:GLU:HB3	1:A:403:LYS:HD2	0.44	1.90	17	1
1:A:395:TRP:CZ2	1:A:402:LYS:HE3	0.44	2.47	44	1
1:A:399:ALA:HB2	1:A:403:LYS:HG3	0.44	1.89	46	1
1:A:394:LYS:HE3	1:A:396:HIS:CE1	0.44	2.48	4	5
1:A:387:ASN:ND2	1:A:388:GLU:N	0.43	2.66	60	1
1:A:399:ALA:CB	1:A:403:LYS:HG3	0.43	2.43	50	3
1:A:388:GLU:O	1:A:390:LYS:N	0.43	2.51	49	1
1:A:408:LYS:N	1:A:408:LYS:HD3	0.43	2.29	7	1
1:A:385:ASP:CG	1:A:386:GLN:N	0.43	2.72	14	2
1:A:376:GLU:HG2	1:A:392:PRO:HB3	0.43	1.90	22	1
1:A:395:TRP:HZ2	1:A:402:LYS:HE3	0.43	1.74	44	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:409:GLU:N	1:A:409:GLU:OE1	0.43	2.51	51	1
1:A:384:LYS:HB3	1:A:388:GLU:CB	0.43	2.43	16	1
1:A:409:GLU:OE1	1:A:409:GLU:N	0.43	2.51	40	1
1:A:392:PRO:HA	1:A:410:GLU:HG3	0.43	1.91	16	2
1:A:408:LYS:HB3	1:A:412:LYS:NZ	0.43	2.29	29	1
1:A:376:GLU:OE1	1:A:411:ALA:HB1	0.43	2.14	56	2
1:A:401:ASN:N	1:A:401:ASN:HD22	0.42	2.10	17	2
1:A:394:LYS:HB2	1:A:410:GLU:OE1	0.42	2.14	5	1
1:A:399:ALA:O	1:A:400:GLU:HB3	0.42	2.14	6	3
1:A:400:GLU:CD	1:A:400:GLU:H	0.42	2.18	42	1
1:A:407:ASP:OD2	1:A:410:GLU:HG2	0.42	2.15	6	1
1:A:382:ASN:ND2	1:A:382:ASN:N	0.42	2.67	8	1
1:A:406:LEU:HD13	1:A:406:LEU:C	0.42	2.34	34	1
1:A:408:LYS:O	1:A:412:LYS:HG2	0.42	2.14	5	5
1:A:394:LYS:HB2	1:A:405:THR:O	0.42	2.15	48	1
1:A:382:ASN:N	1:A:382:ASN:HD22	0.42	2.12	22	11
1:A:399:ALA:O	1:A:400:GLU:HB2	0.42	2.15	44	12
1:A:381:CYS:HA	1:A:384:LYS:CG	0.42	2.44	16	1
1:A:396:HIS:CB	1:A:403:LYS:HB2	0.42	2.44	41	1
1:A:396:HIS:HB2	1:A:403:LYS:O	0.42	2.14	29	4
1:A:401:ASN:HD22	1:A:401:ASN:N	0.42	2.12	57	2
1:A:397:ASN:HD22	1:A:398:ASP:H	0.42	1.58	25	1
1:A:409:GLU:HA	1:A:412:LYS:HG2	0.42	1.92	54	1
1:A:379:GLY:O	1:A:383:LYS:HG3	0.42	2.15	15	1
1:A:393:CYS:SG	1:A:394:LYS:N	0.42	2.93	5	1
1:A:397:ASN:ND2	1:A:397:ASN:N	0.42	2.68	38	1
1:A:387:ASN:HD22	1:A:387:ASN:N	0.41	2.13	60	1
1:A:376:GLU:HG2	1:A:392:PRO:HG3	0.41	1.93	13	1
1:A:385:ASP:O	1:A:389:CYS:HB2	0.41	2.14	47	2
1:A:394:LYS:O	1:A:404:CYS:HA	0.41	2.15	48	1
1:A:397:ASN:N	1:A:397:ASN:ND2	0.41	2.69	5	3
1:A:399:ALA:HB3	1:A:402:LYS:HA	0.41	1.91	21	2
1:A:395:TRP:HZ2	1:A:402:LYS:HD2	0.41	1.76	58	1
1:A:394:LYS:HG2	1:A:407:ASP:HB2	0.41	1.92	44	1
1:A:391:SER:N	1:A:392:PRO:CD	0.41	2.84	27	1
1:A:403:LYS:HB2	1:A:403:LYS:NZ	0.41	2.31	52	2
1:A:376:GLU:OE1	1:A:384:LYS:HD3	0.41	2.15	6	1
1:A:401:ASN:N	1:A:401:ASN:ND2	0.41	2.69	17	1
1:A:409:GLU:O	1:A:412:LYS:HG3	0.41	2.16	48	1
1:A:397:ASN:ND2	1:A:398:ASP:N	0.40	2.69	25	1
1:A:408:LYS:HD2	1:A:408:LYS:H	0.40	1.76	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:397:ASN:HA	1:A:402:LYS:NZ	0.40	2.30	60	1
1:A:402:LYS:HB3	1:A:402:LYS:NZ	0.40	2.31	60	1
1:A:383:LYS:N	1:A:383:LYS:CD	0.40	2.85	55	1
1:A:408:LYS:HG3	1:A:409:GLU:OE2	0.40	2.17	6	1
1:A:394:LYS:NZ	1:A:394:LYS:HB3	0.40	2.32	29	1
1:A:383:LYS:HB2	1:A:384:LYS:NZ	0.40	2.32	15	1
1:A:397:ASN:HA	1:A:402:LYS:HD2	0.40	1.94	46	1
1:A:402:LYS:HB3	1:A:402:LYS:HZ2	0.40	1.75	60	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	37/80 (46%)	30±2 (80±4%)	4±2 (10±4%)	4±1 (10±3%)	1	10
All	All	2220/4800 (46%)	1774 (80%)	229 (10%)	217 (10%)	1	10

All 8 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	402	LYS	58
1	A	376	GLU	42
1	A	393	CYS	31
1	A	401	ASN	31
1	A	389	CYS	25
1	A	398	ASP	12
1	A	384	LYS	11
1	A	399	ALA	7

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	34/68 (50%)	32±1 (95±3%)	2±1 (5±3%)	20	73
All	All	2040/4080 (50%)	1928 (95%)	112 (5%)	20	73

All 18 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	384	LYS	30
1	A	401	ASN	22
1	A	412	LYS	11
1	A	397	ASN	7
1	A	402	LYS	7
1	A	387	ASN	6
1	A	383	LYS	4
1	A	408	LYS	4
1	A	404	CYS	3
1	A	390	LYS	3
1	A	376	GLU	3
1	A	409	GLU	3
1	A	381	CYS	2
1	A	400	GLU	2
1	A	403	LYS	2
1	A	386	GLN	1
1	A	398	ASP	1
1	A	410	GLU	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 oligosaccharides 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

No chemical shift data were provided