



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 4, 2026 – 11:40 PM UTC

PDB ID : 5ZEA / pdb_00005zea
Title : Crystal structure of the nucleotide-free mutant A3B3
Authors : Maruyama, S.; Suzuki, K.; Mizutani, K.; Saito, Y.; Imai, F.L.; Ishizuka-Katsura, Y.; Shirouzu, M.; Ichiro, Y.; Murata, T.
Deposited on : 2018-02-27
Resolution : 3.38 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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
Mogul	:	2022.3.0, CSD as543be (2022)
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

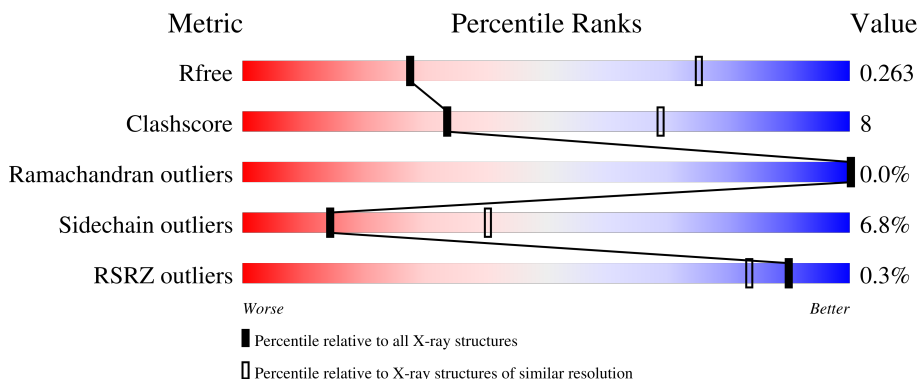
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.38 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	1047 (3.42-3.34)
Clashscore	190562	1067 (3.42-3.34)
Ramachandran outliers	187476	1056 (3.42-3.34)
Sidechain outliers	187428	1056 (3.42-3.34)
RSRZ outliers	180081	1047 (3.42-3.34)

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	594	78% 19% ..
1	B	594	77% 20% ..
1	C	594	77% 20% ..
1	G	594	83% 15% ..
1	H	594	79% 18% ..

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Mol	Chain	Length	Quality of chain
1	I	594	% 75% 21%
2	D	462	74% 23%

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 47987 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 V-type sodium ATPase catalytic subunit A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	587	Total	C	N	O	S	0	0	0
			4571	2871	767	907	26			
1	B	586	Total	C	N	O	S	0	0	0
			4471	2800	756	891	24			
1	C	584	Total	C	N	O	S	0	0	0
			4486	2820	751	889	26			
1	G	587	Total	C	N	O	S	0	0	0
			4519	2840	759	894	26			
1	H	586	Total	C	N	O	S	0	0	0
			4489	2815	757	893	24			
1	I	584	Total	C	N	O	S	0	0	0
			4406	2770	736	876	24			

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	GLY	-	expression tag	UNP Q08636
A	-5	SER	-	expression tag	UNP Q08636
A	-4	SER	-	expression tag	UNP Q08636
A	-3	GLY	-	expression tag	UNP Q08636
A	-2	SER	-	expression tag	UNP Q08636
A	-1	SER	-	expression tag	UNP Q08636
A	0	GLY	-	expression tag	UNP Q08636
B	-6	GLY	-	expression tag	UNP Q08636
B	-5	SER	-	expression tag	UNP Q08636
B	-4	SER	-	expression tag	UNP Q08636
B	-3	GLY	-	expression tag	UNP Q08636
B	-2	SER	-	expression tag	UNP Q08636
B	-1	SER	-	expression tag	UNP Q08636
B	0	GLY	-	expression tag	UNP Q08636
C	-6	GLY	-	expression tag	UNP Q08636
C	-5	SER	-	expression tag	UNP Q08636
C	-4	SER	-	expression tag	UNP Q08636

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-3	GLY	-	expression tag	UNP Q08636
C	-2	SER	-	expression tag	UNP Q08636
C	-1	SER	-	expression tag	UNP Q08636
C	0	GLY	-	expression tag	UNP Q08636
G	-6	GLY	-	expression tag	UNP Q08636
G	-5	SER	-	expression tag	UNP Q08636
G	-4	SER	-	expression tag	UNP Q08636
G	-3	GLY	-	expression tag	UNP Q08636
G	-2	SER	-	expression tag	UNP Q08636
G	-1	SER	-	expression tag	UNP Q08636
G	0	GLY	-	expression tag	UNP Q08636
H	-6	GLY	-	expression tag	UNP Q08636
H	-5	SER	-	expression tag	UNP Q08636
H	-4	SER	-	expression tag	UNP Q08636
H	-3	GLY	-	expression tag	UNP Q08636
H	-2	SER	-	expression tag	UNP Q08636
H	-1	SER	-	expression tag	UNP Q08636
H	0	GLY	-	expression tag	UNP Q08636
I	-6	GLY	-	expression tag	UNP Q08636
I	-5	SER	-	expression tag	UNP Q08636
I	-4	SER	-	expression tag	UNP Q08636
I	-3	GLY	-	expression tag	UNP Q08636
I	-2	SER	-	expression tag	UNP Q08636
I	-1	SER	-	expression tag	UNP Q08636
I	0	GLY	-	expression tag	UNP Q08636

- Molecule 2 is a protein called V-type sodium ATPase subunit B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	454	Total	C	N	O	S	0	0	0
			3528	2236	605	673	14			
2	E	452	Total	C	N	O	S	0	0	0
			3449	2184	595	656	14			
2	F	451	Total	C	N	O	S	0	0	0
			3412	2156	589	654	13			
2	J	455	Total	C	N	O	S	0	0	0
			3517	2230	601	672	14			
2	K	454	Total	C	N	O	S	0	0	0
			3502	2220	600	668	14			
2	L	455	Total	C	N	O	S	0	0	0
			3435	2167	589	667	12			

There are 48 discrepancies between the modelled and reference sequences:

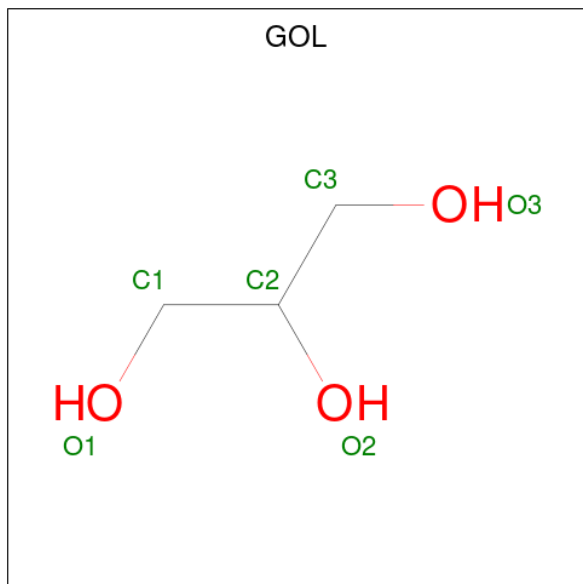
Chain	Residue	Modelled	Actual	Comment	Reference
D	-6	GLY	-	expression tag	UNP Q08637
D	-5	SER	-	expression tag	UNP Q08637
D	-4	SER	-	expression tag	UNP Q08637
D	-3	GLY	-	expression tag	UNP Q08637
D	-2	SER	-	expression tag	UNP Q08637
D	-1	SER	-	expression tag	UNP Q08637
D	0	GLY	-	expression tag	UNP Q08637
D	65	TYR	LEU	engineered mutation	UNP Q08637
E	-6	GLY	-	expression tag	UNP Q08637
E	-5	SER	-	expression tag	UNP Q08637
E	-4	SER	-	expression tag	UNP Q08637
E	-3	GLY	-	expression tag	UNP Q08637
E	-2	SER	-	expression tag	UNP Q08637
E	-1	SER	-	expression tag	UNP Q08637
E	0	GLY	-	expression tag	UNP Q08637
E	65	TYR	LEU	engineered mutation	UNP Q08637
F	-6	GLY	-	expression tag	UNP Q08637
F	-5	SER	-	expression tag	UNP Q08637
F	-4	SER	-	expression tag	UNP Q08637
F	-3	GLY	-	expression tag	UNP Q08637
F	-2	SER	-	expression tag	UNP Q08637
F	-1	SER	-	expression tag	UNP Q08637
F	0	GLY	-	expression tag	UNP Q08637
F	65	TYR	LEU	engineered mutation	UNP Q08637
J	-6	GLY	-	expression tag	UNP Q08637
J	-5	SER	-	expression tag	UNP Q08637
J	-4	SER	-	expression tag	UNP Q08637
J	-3	GLY	-	expression tag	UNP Q08637
J	-2	SER	-	expression tag	UNP Q08637
J	-1	SER	-	expression tag	UNP Q08637
J	0	GLY	-	expression tag	UNP Q08637
J	65	TYR	LEU	engineered mutation	UNP Q08637
K	-6	GLY	-	expression tag	UNP Q08637
K	-5	SER	-	expression tag	UNP Q08637
K	-4	SER	-	expression tag	UNP Q08637
K	-3	GLY	-	expression tag	UNP Q08637
K	-2	SER	-	expression tag	UNP Q08637
K	-1	SER	-	expression tag	UNP Q08637
K	0	GLY	-	expression tag	UNP Q08637
K	65	TYR	LEU	engineered mutation	UNP Q08637
L	-6	GLY	-	expression tag	UNP Q08637
L	-5	SER	-	expression tag	UNP Q08637
L	-4	SER	-	expression tag	UNP Q08637

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Chain	Residue	Modelled	Actual	Comment	Reference
L	-3	GLY	-	expression tag	UNP Q08637
L	-2	SER	-	expression tag	UNP Q08637
L	-1	SER	-	expression tag	UNP Q08637
L	0	GLY	-	expression tag	UNP Q08637
L	65	TYR	LEU	engineered mutation	UNP Q08637

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	C	1	Total C O 6 3 3	0	0
3	D	1	Total C O 6 3 3	0	0
3	D	1	Total C O 6 3 3	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total	C	O	0	0
			6	3	3		
3	D	1	Total	C	O	0	0
			6	3	3		
3	D	1	Total	C	O	0	0
			6	3	3		
3	G	1	Total	C	O	0	0
			6	3	3		
3	G	1	Total	C	O	0	0
			6	3	3		
3	G	1	Total	C	O	0	0
			6	3	3		
3	H	1	Total	C	O	0	0
			6	3	3		
3	K	1	Total	C	O	0	0
			6	3	3		

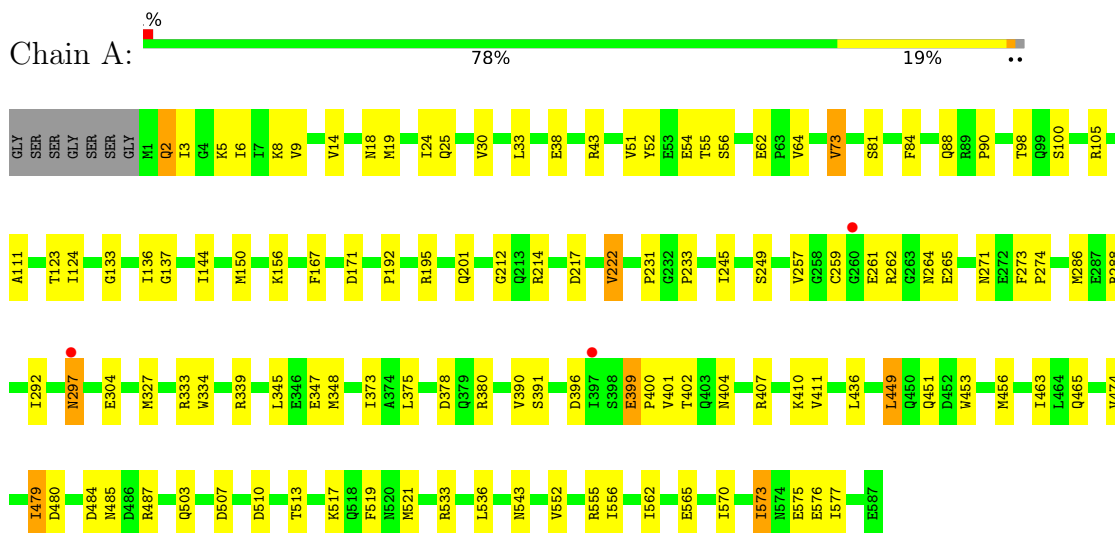
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	30	Total	O	0	0
			30	30		
4	B	3	Total	O	0	0
			3	3		
4	C	8	Total	O	0	0
			8	8		
4	D	9	Total	O	0	0
			9	9		
4	E	9	Total	O	0	0
			9	9		
4	F	3	Total	O	0	0
			3	3		
4	G	5	Total	O	0	0
			5	5		
4	H	10	Total	O	0	0
			10	10		
4	I	8	Total	O	0	0
			8	8		
4	J	9	Total	O	0	0
			9	9		
4	K	6	Total	O	0	0
			6	6		

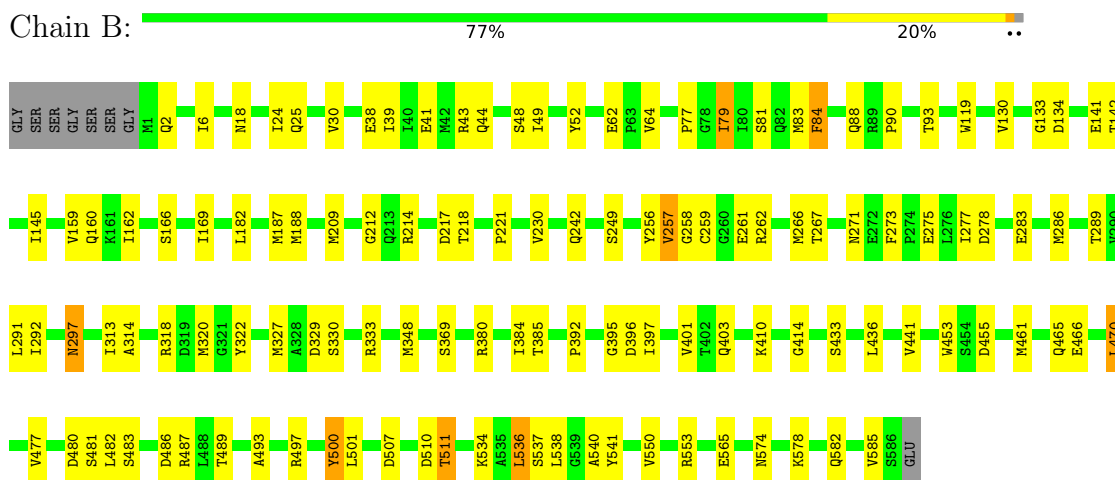
3 Residue-property plots

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: V-type sodium ATPase catalytic subunit A

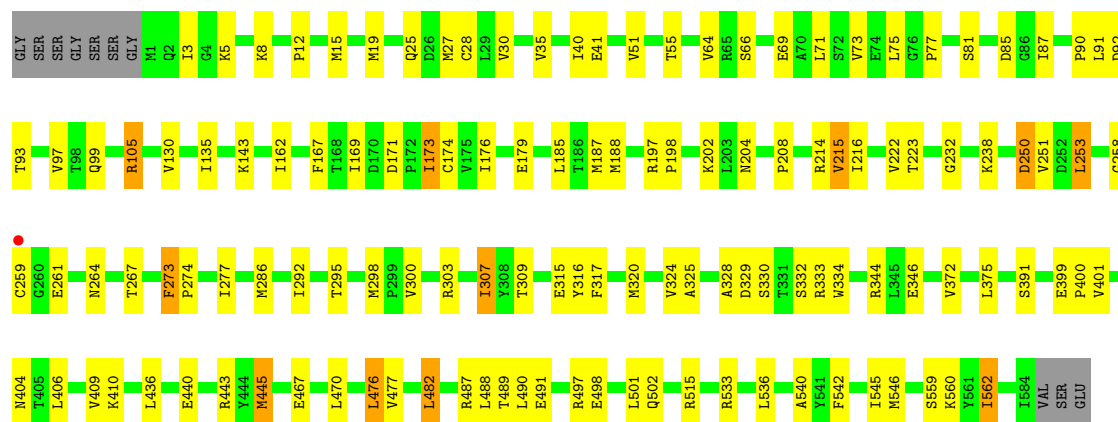


• Molecule 1: V-type sodium ATPase catalytic subunit A



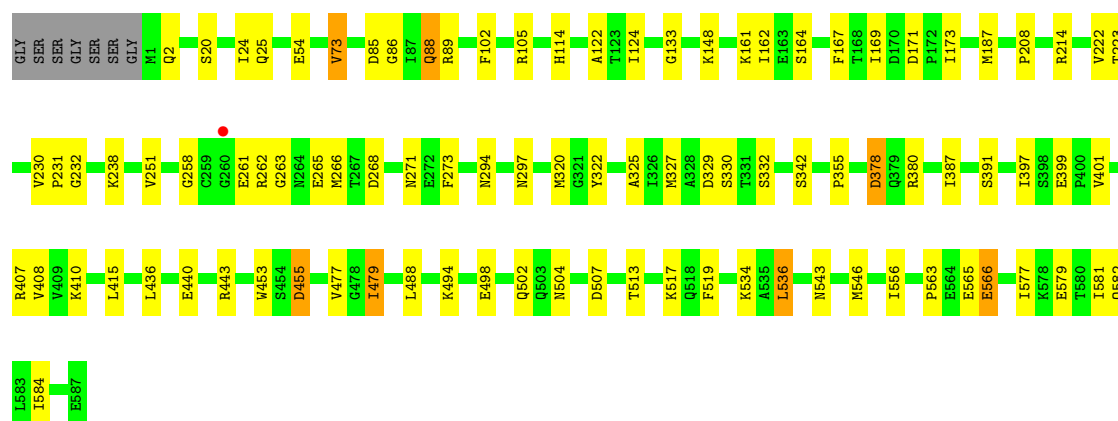
• Molecule 1: V-type sodium ATPase catalytic subunit A





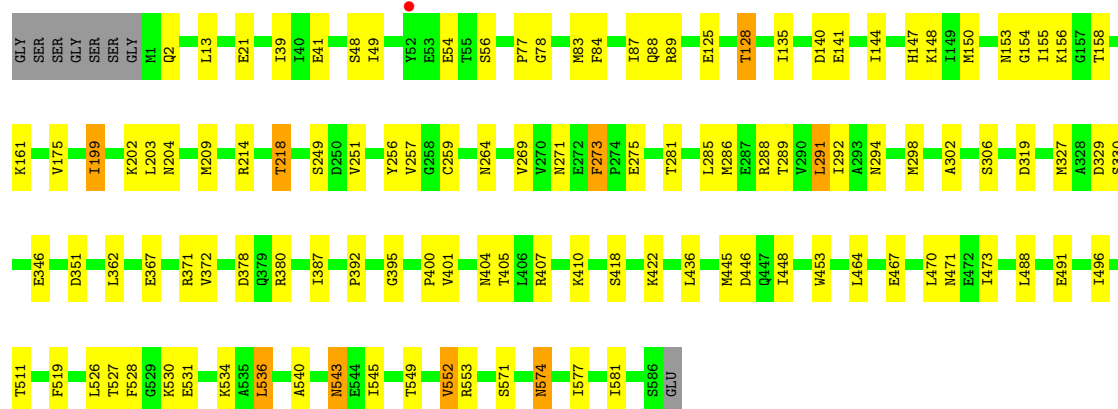
● Molecule 1: V-type sodium ATPase catalytic subunit A

Chain G: 83% 15% ..



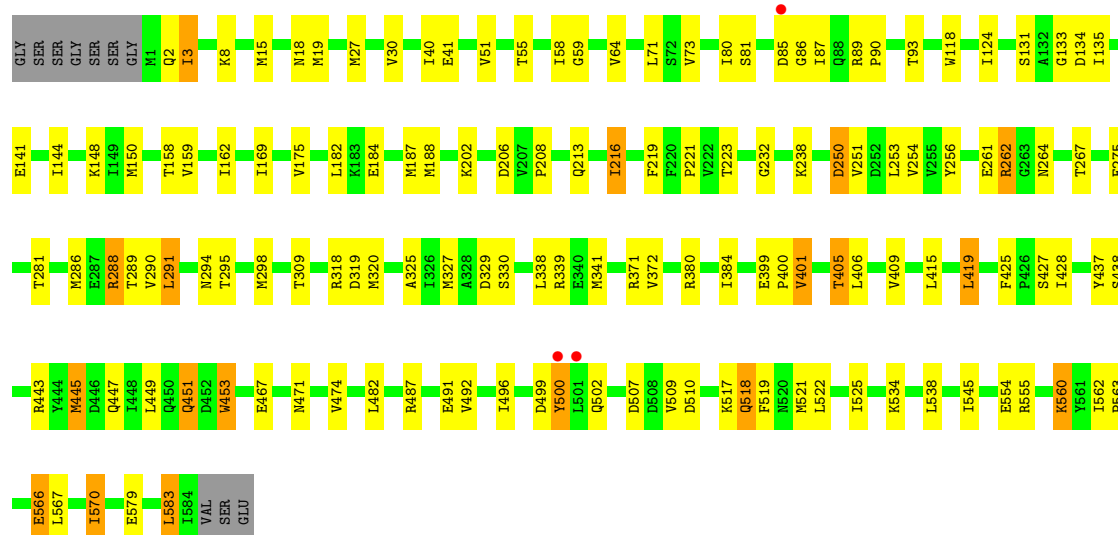
● Molecule 1: V-type sodium ATPase catalytic subunit A

Chain H: 79% 18% ..

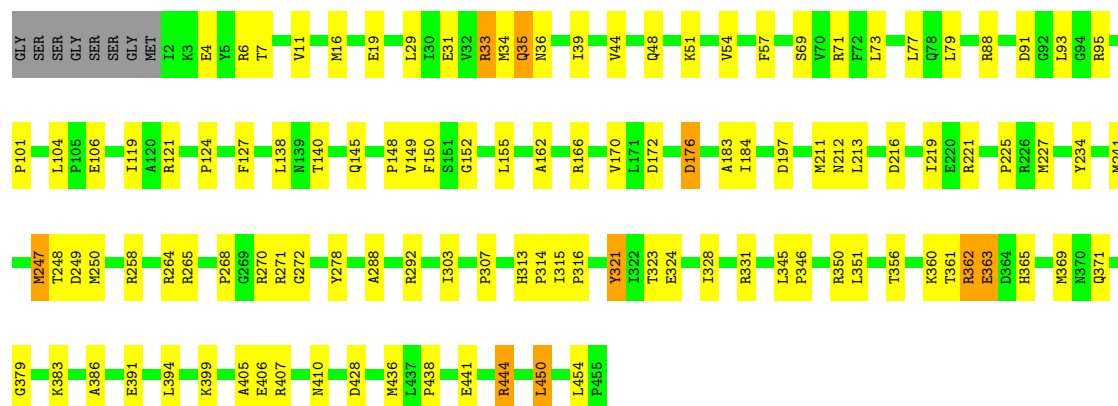


● Molecule 1: V-type sodium ATPase catalytic subunit A

Chain I: 75% 21% ..



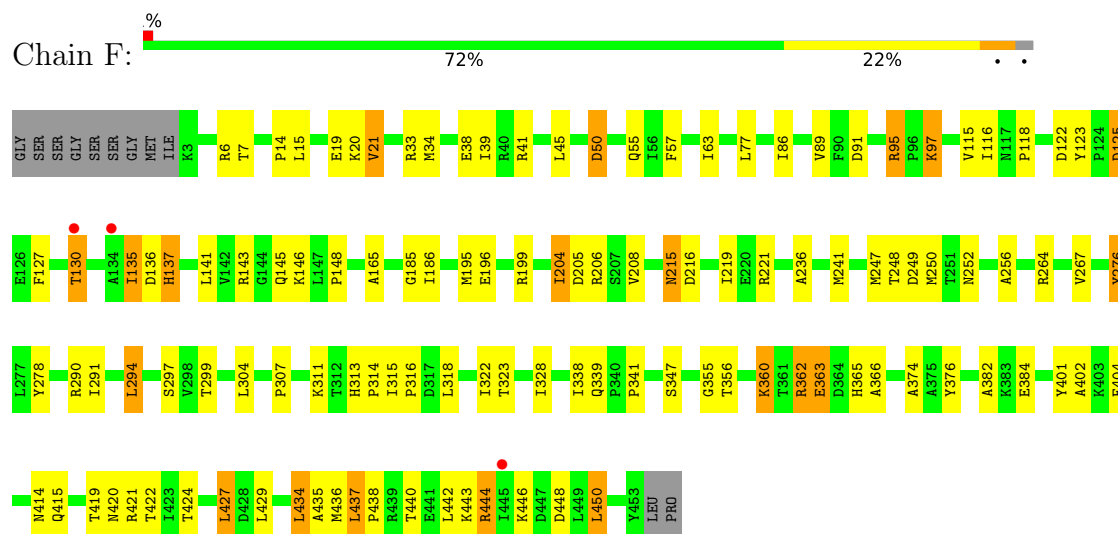
- Molecule 2: V-type sodium ATPase subunit B



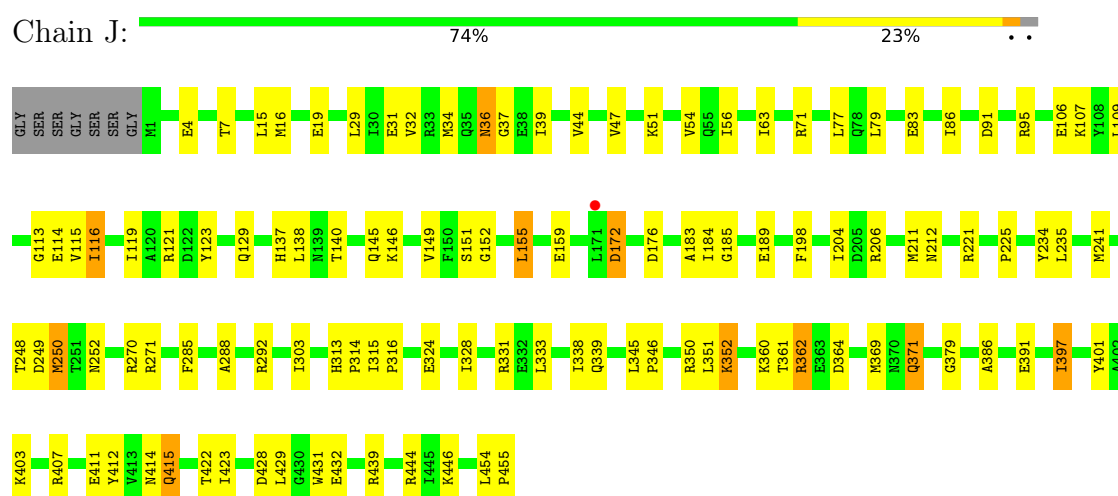
- Molecule 2: V-type sodium ATPase subunit B



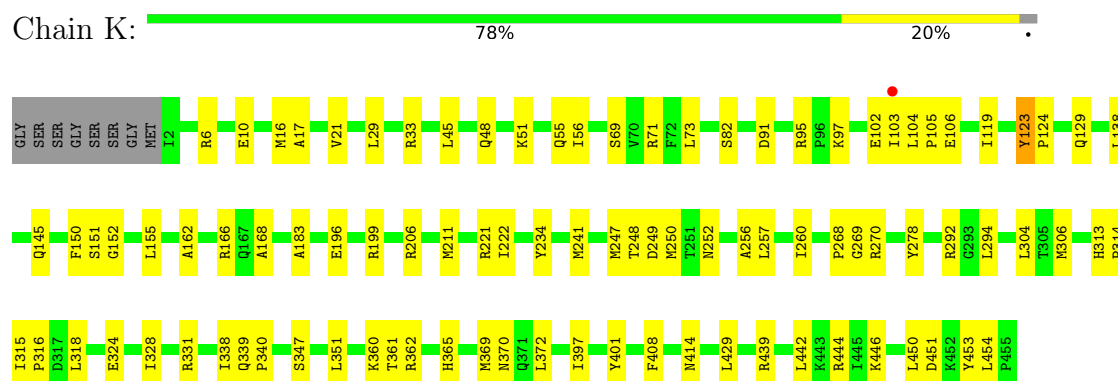
- Molecule 2: V-type sodium ATPase subunit B



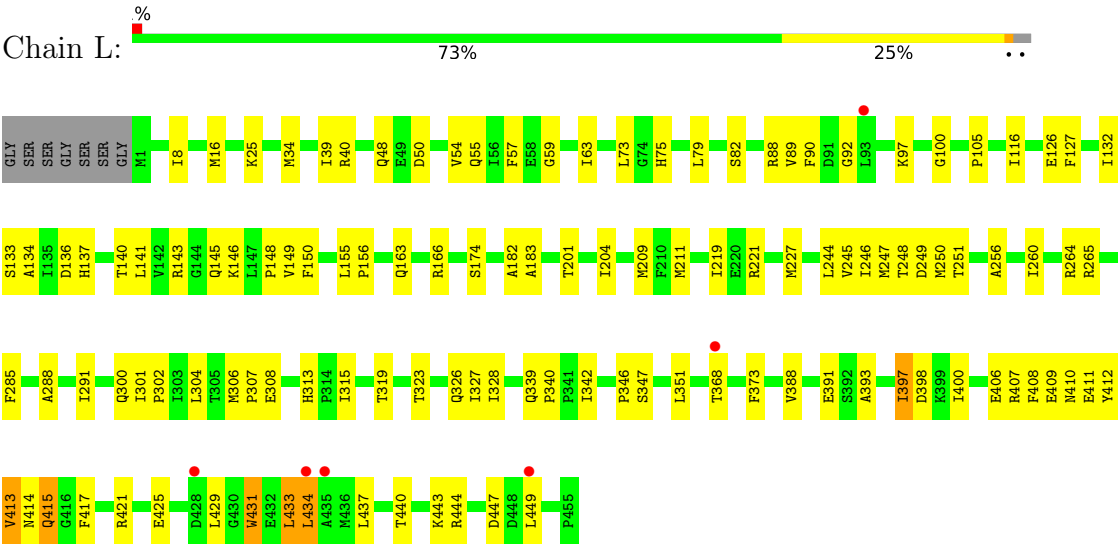
- Molecule 2: V-type sodium ATPase subunit B



- Molecule 2: V-type sodium ATPase subunit B



- Molecule 2: V-type sodium ATPase subunit B



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	180.84Å 107.77Å 193.37Å 90.00° 99.39° 90.00°	Depositor
Resolution (Å)	48.20 – 3.38 48.20 – 3.38	Depositor EDS
% Data completeness (in resolution range)	99.0 (48.20-3.38) 99.0 (48.20-3.38)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.17 (at 3.40Å)	Xtriage
Refinement program	PHENIX 1.12_2829	Depositor
R, R_{free}	0.215 , 0.258 0.223 , 0.263	Depositor DCC
R_{free} test set	5088 reflections (4.34%)	wwPDB-VP
Wilson B-factor (Å ²)	97.4	Xtriage
Anisotropy	0.116	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 81.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	47987	wwPDB-VP
Average B, all atoms (Å ²)	108.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.85% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: GOL

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.10	0/4647	0.27	0/6287
1	B	0.09	0/4547	0.25	0/6166
1	C	0.09	0/4562	0.27	0/6183
1	G	0.09	0/4594	0.26	0/6222
1	H	0.09	0/4565	0.26	0/6187
1	I	0.11	0/4480	0.28	0/6085
2	D	0.10	0/3592	0.28	0/4864
2	E	0.10	0/3512	0.29	0/4762
2	F	0.12	0/3473	0.31	0/4714
2	J	0.10	0/3581	0.30	0/4853
2	K	0.10	0/3566	0.28	0/4835
2	L	0.12	0/3496	0.31	0/4750
All	All	0.10	0/48615	0.28	0/65908

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	4571	0	4534	60	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	4471	0	4289	63	0
1	C	4486	0	4387	69	0
1	G	4519	0	4451	51	0
1	H	4489	0	4352	59	0
1	I	4406	0	4256	82	0
2	D	3528	0	3497	62	0
2	E	3449	0	3340	64	0
2	F	3412	0	3292	66	0
2	J	3517	0	3472	65	0
2	K	3502	0	3440	47	0
2	L	3435	0	3296	67	0
3	A	36	0	48	0	0
3	C	6	0	8	0	0
3	D	30	0	40	0	0
3	G	18	0	24	0	0
3	H	6	0	8	0	0
3	K	6	0	8	0	0
4	A	30	0	0	1	0
4	B	3	0	0	0	0
4	C	8	0	0	1	0
4	D	9	0	0	1	0
4	E	9	0	0	0	0
4	F	3	0	0	0	0
4	G	5	0	0	1	0
4	H	10	0	0	0	0
4	I	8	0	0	1	0
4	J	9	0	0	0	0
4	K	6	0	0	0	0
All	All	47987	0	46742	732	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 8.

The worst 5 of 732 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)
2:F:404:PHE:HE2	2:F:436:MET:H	1.09	0.95
1:I:206:ASP:OD2	1:I:371:ARG:NH1	2.08	0.85
2:F:20:LYS:N	2:F:50:ASP:OD2	2.12	0.82
1:G:148:LYS:H	1:G:320:MET:HE3	1.47	0.79
2:J:155:LEU:HD21	2:J:331:ARG:HG2	1.67	0.75

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	585/594 (98%)	569 (97%)	16 (3%)	0	100	100
1	B	584/594 (98%)	576 (99%)	8 (1%)	0	100	100
1	C	582/594 (98%)	564 (97%)	18 (3%)	0	100	100
1	G	585/594 (98%)	563 (96%)	21 (4%)	1 (0%)	43	70
1	H	584/594 (98%)	569 (97%)	15 (3%)	0	100	100
1	I	582/594 (98%)	569 (98%)	13 (2%)	0	100	100
2	D	452/462 (98%)	441 (98%)	11 (2%)	0	100	100
2	E	450/462 (97%)	438 (97%)	12 (3%)	0	100	100
2	F	449/462 (97%)	429 (96%)	20 (4%)	0	100	100
2	J	453/462 (98%)	444 (98%)	9 (2%)	0	100	100
2	K	452/462 (98%)	445 (98%)	7 (2%)	0	100	100
2	L	453/462 (98%)	430 (95%)	22 (5%)	1 (0%)	43	70
All	All	6211/6336 (98%)	6037 (97%)	172 (3%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	L	393	ALA
1	G	397	ILE

5.3.2 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 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	503/507 (99%)	473 (94%)	30 (6%)	17	43
1	B	466/507 (92%)	433 (93%)	33 (7%)	13	39
1	C	482/507 (95%)	455 (94%)	27 (6%)	19	46
1	G	490/507 (97%)	468 (96%)	22 (4%)	24	50
1	H	476/507 (94%)	452 (95%)	24 (5%)	22	48
1	I	465/507 (92%)	427 (92%)	38 (8%)	10	36
2	D	367/385 (95%)	346 (94%)	21 (6%)	18	45
2	E	344/385 (89%)	312 (91%)	32 (9%)	8	29
2	F	340/385 (88%)	297 (87%)	43 (13%)	4	18
2	J	364/385 (94%)	339 (93%)	25 (7%)	14	40
2	K	360/385 (94%)	343 (95%)	17 (5%)	23	50
2	L	343/385 (89%)	316 (92%)	27 (8%)	11	37
All	All	5000/5352 (93%)	4661 (93%)	339 (7%)	14	40

5 of 339 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	574	ASN
2	J	371	GLN
1	I	182	LEU
1	I	525	ILE
2	K	129	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 40 such sidechains are listed below:

Mol	Chain	Res	Type
1	I	471	ASN
2	J	414	ASN
1	I	518	GLN
2	J	167	GLN
2	L	48	GLN

5.3.3 RNA ⓘ

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](#)

17 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	GOL	C	601	-	5,5,5	0.97	0	5,5,5	1.04	0
3	GOL	A	606	-	5,5,5	0.93	0	5,5,5	1.12	0
3	GOL	K	501	-	5,5,5	0.94	0	5,5,5	1.06	0
3	GOL	A	602	-	5,5,5	0.97	0	5,5,5	1.06	0
3	GOL	D	503	-	5,5,5	0.94	0	5,5,5	1.08	0
3	GOL	A	603	-	5,5,5	0.93	0	5,5,5	1.09	0
3	GOL	D	505	-	5,5,5	0.92	0	5,5,5	1.10	0
3	GOL	G	601	-	5,5,5	0.95	0	5,5,5	1.09	0
3	GOL	H	601	-	5,5,5	0.94	0	5,5,5	1.07	0
3	GOL	A	605	-	5,5,5	0.96	0	5,5,5	1.07	0
3	GOL	A	604	-	5,5,5	0.94	0	5,5,5	1.08	0
3	GOL	G	602	-	5,5,5	0.95	0	5,5,5	1.05	0
3	GOL	G	603	-	5,5,5	0.93	0	5,5,5	1.10	0
3	GOL	A	601	-	5,5,5	0.83	0	5,5,5	1.22	1 (20%)
3	GOL	D	501	-	5,5,5	0.93	0	5,5,5	1.11	0
3	GOL	D	502	-	5,5,5	0.96	0	5,5,5	1.04	0
3	GOL	D	504	-	5,5,5	0.96	0	5,5,5	1.05	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	C	601	-	-	2/4/4/4	-
3	GOL	A	606	-	-	4/4/4/4	-
3	GOL	K	501	-	-	0/4/4/4	-
3	GOL	A	602	-	-	2/4/4/4	-
3	GOL	D	503	-	-	2/4/4/4	-
3	GOL	A	603	-	-	0/4/4/4	-
3	GOL	D	505	-	-	0/4/4/4	-
3	GOL	G	601	-	-	2/4/4/4	-
3	GOL	H	601	-	-	0/4/4/4	-
3	GOL	A	605	-	-	0/4/4/4	-
3	GOL	A	604	-	-	2/4/4/4	-
3	GOL	G	602	-	-	2/4/4/4	-
3	GOL	G	603	-	-	2/4/4/4	-
3	GOL	A	601	-	-	4/4/4/4	-
3	GOL	D	501	-	-	0/4/4/4	-
3	GOL	D	502	-	-	2/4/4/4	-
3	GOL	D	504	-	-	0/4/4/4	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
3	A	601	GOL	C3-C2-C1	-2.04	104.30	111.80

There are no chirality outliers.

5 of 24 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	601	GOL	O1-C1-C2-C3
3	A	606	GOL	O1-C1-C2-C3
3	D	502	GOL	O1-C1-C2-C3
3	D	503	GOL	O1-C1-C2-C3
3	G	601	GOL	O1-C1-C2-C3

There are no ring outliers.

No monomer is involved in short contacts.

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	587/594 (98%)	-0.35	3 (0%) 87 77	42, 67, 119, 162	0
1	B	586/594 (98%)	-0.10	0 100 100	51, 126, 183, 248	0
1	C	584/594 (98%)	-0.10	1 (0%) 91 87	68, 110, 169, 252	0
1	G	587/594 (98%)	-0.24	1 (0%) 91 87	45, 85, 165, 251	0
1	H	586/594 (98%)	-0.18	1 (0%) 91 87	62, 101, 165, 225	0
1	I	584/594 (98%)	0.05	3 (0%) 87 77	73, 119, 212, 238	0
2	D	454/462 (98%)	-0.30	0 100 100	43, 76, 124, 161	0
2	E	452/462 (97%)	-0.18	1 (0%) 91 87	56, 93, 186, 266	0
2	F	451/462 (97%)	0.04	3 (0%) 84 72	73, 136, 232, 279	0
2	J	455/462 (98%)	-0.13	1 (0%) 91 87	58, 93, 152, 229	0
2	K	454/462 (98%)	-0.23	1 (0%) 91 87	54, 88, 139, 202	0
2	L	455/462 (98%)	0.04	6 (1%) 75 60	68, 123, 213, 305	0
All	All	6235/6336 (98%)	-0.14	21 (0%) 90 83	42, 101, 188, 305	0

The worst 5 of 21 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	259	CYS	3.5
1	G	260	GLY	3.4
1	A	260	GLY	3.1
2	F	130	THR	3.0
2	L	428	ASP	2.9

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 ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	GOL	A	602	6/6	0.59	0.13	102,103,104,105	0
3	GOL	K	501	6/6	0.61	0.13	104,105,105,105	0
3	GOL	A	605	6/6	0.64	0.14	94,96,96,97	0
3	GOL	G	602	6/6	0.67	0.11	91,92,93,95	0
3	GOL	C	601	6/6	0.67	0.11	116,118,119,120	0
3	GOL	D	505	6/6	0.71	0.17	116,117,117,118	0
3	GOL	D	504	6/6	0.76	0.17	114,115,116,116	0
3	GOL	G	601	6/6	0.77	0.09	95,95,95,96	0
3	GOL	D	503	6/6	0.80	0.16	137,137,138,138	0
3	GOL	G	603	6/6	0.81	0.09	92,94,94,94	0
3	GOL	A	601	6/6	0.81	0.11	108,110,110,112	0
3	GOL	D	502	6/6	0.84	0.10	84,86,86,86	0
3	GOL	A	603	6/6	0.85	0.12	93,95,96,96	0
3	GOL	D	501	6/6	0.85	0.11	74,76,77,77	0
3	GOL	A	604	6/6	0.86	0.12	77,79,80,80	0
3	GOL	A	606	6/6	0.89	0.14	110,110,111,111	0
3	GOL	H	601	6/6	0.92	0.10	89,90,91,92	0

6.5 Other polymers ⓘ

There are no such residues in this entry.