



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 28, 2024 – 01:20 PM EDT

PDB ID : 3HZJ
Title : Crystal structure of the RabGAP domain of the RABGAP1L protein
Authors : Nedyalkova, L.; Tempel, W.; Tong, Y.; Zhong, N.; MacKenzie, F.; Arrowsmith, C.H.; Edwards, A.M.; Bountra, C.; Weigelt, J.; Bochkarev, A.; Park, H.; Structural Genomics Consortium (SGC)
Deposited on : 2009-06-23
Resolution : 2.30 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 2022.3.0, CSD as543be (2022)
Xtrriage (Phenix) : 1.20.1
EDS : **FAILED**
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

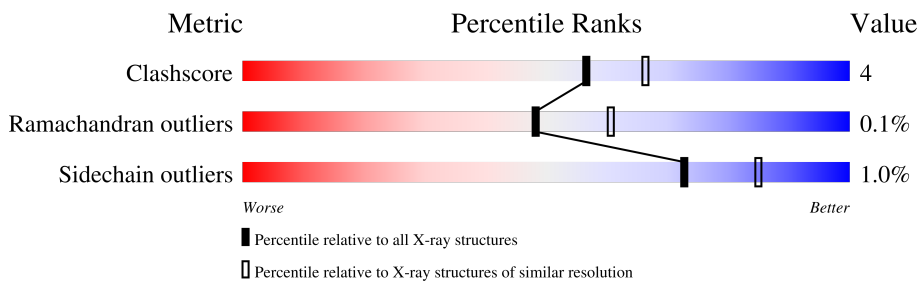
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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))
Clashscore	180529	6698 (2.30-2.30)
Ramachandran outliers	177936	6640 (2.30-2.30)
Sidechain outliers	177891	6640 (2.30-2.30)

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.

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	A	310	
1	B	310	
1	C	310	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 6473 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 RAB GTPase-activating protein 1-like.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	287	2270	1466	378	410	8	8	0	0	0
1	B	256	1887	1231	312	330	7	7	0	0	0
1	C	288	2271	1467	382	406	8	8	0	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	506	GLY	-	expression tag	UNP Q5R372
B	506	GLY	-	expression tag	UNP Q5R372
C	506	GLY	-	expression tag	UNP Q5R372

- Molecule 2 is UNKNOWN ATOM OR ION (three-letter code: UNX) (formula: X).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	14	Total 14	X 14	0	0
2	B	4	Total 4	X 4	0	0
2	C	14	Total 14	X 14	0	0

- Molecule 3 is water.


Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	3	Total 3	O 3	0	0
3	C	10	Total 10	O 10	0	0

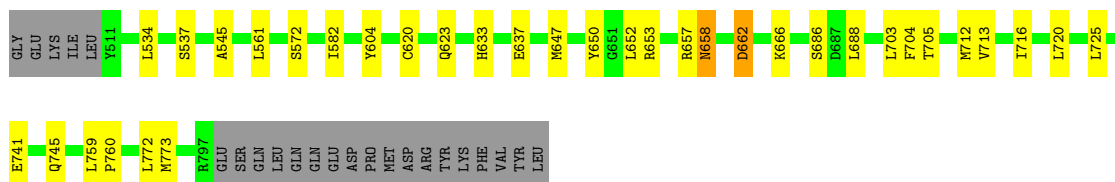
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS failed to run properly.

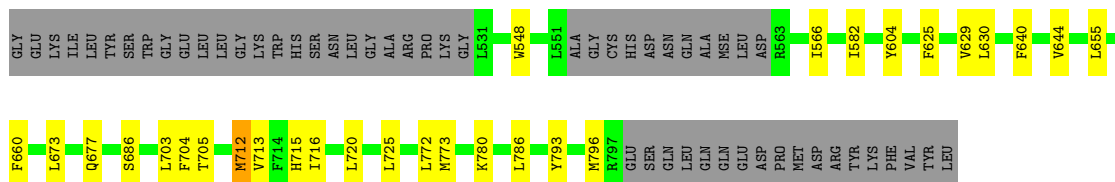
- Molecule 1: RAB GTPase-activating protein 1-like

Chain A: 




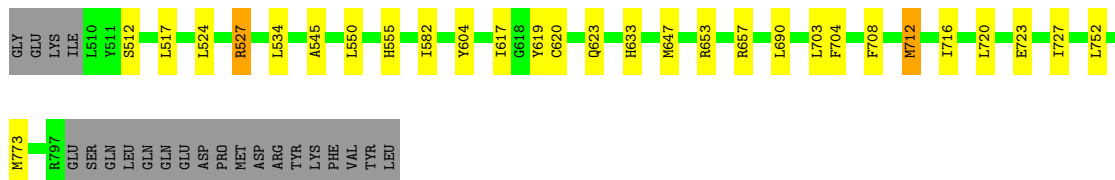
- Molecule 1: RAB GTPase-activating protein 1-like

Chain B: 



- Molecule 1: RAB GTPase-activating protein 1-like

Chain C: 



4 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	48.09Å 64.57Å 290.25Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.30	Depositor
% Data completeness (in resolution range)	92.3 (20.00-2.30)	Depositor
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.89 (at 2.30Å)	Xtrriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.244 , 0.274	Depositor
Wilson B-factor (Å ²)	49.4	Xtrriage
Anisotropy	0.106	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	6473	wwPDB-VP
Average B, all atoms (Å ²)	53.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.56% 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: UNX

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	0.57	0/2317	0.59	1/3130 (0.0%)
1	B	0.50	0/1923	0.53	0/2609
1	C	0.61	0/2318	0.63	3/3132 (0.1%)
All	All	0.57	0/6558	0.59	4/8871 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	712	MSE	CG-SE-CE	-8.85	79.43	98.90
1	C	527	ARG	NE-CZ-NH2	6.17	123.39	120.30
1	C	527	ARG	NE-CZ-NH1	-5.35	117.62	120.30
1	A	688	LEU	CA-CB-CG	5.28	127.45	115.30

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	2270	0	2159	22	0
1	B	1887	0	1686	17	0
1	C	2271	0	2159	18	0
2	A	14	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	4	0	0	0	0
2	C	14	0	0	0	0
3	A	3	0	0	0	0
3	C	10	0	0	0	0
All	All	6473	0	6004	56	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 4.

All (56) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:703:LEU:HD13	1:A:720:LEU:HD22	1.62	0.81
1:C:712:MSE:SE	1:C:716:ILE:HD11	2.33	0.77
1:C:712:MSE:SE	1:C:716:ILE:CD1	2.90	0.69
1:C:708:PHE:CD2	1:C:712:MSE:HE1	2.28	0.68
1:A:712:MSE:SE	1:A:716:ILE:HD11	2.52	0.59
1:C:617:ILE:HD12	1:C:620:CYS:SG	2.42	0.59
1:B:715:HIS:HB3	1:B:773:MSE:HG3	1.85	0.58
1:B:793:TYR:CE1	1:B:796:MSE:HE1	2.38	0.58
1:B:793:TYR:CZ	1:B:796:MSE:HE1	2.38	0.57
1:B:703:LEU:HD13	1:B:720:LEU:HD22	1.86	0.56
1:C:524:LEU:O	1:C:527:ARG:NH1	2.38	0.56
1:A:686:SER:HB3	1:B:686:SER:HB3	1.88	0.56
1:C:703:LEU:HD13	1:C:720:LEU:HD22	1.87	0.56
1:B:793:TYR:CE1	1:B:796:MSE:CE	2.89	0.54
1:B:673:LEU:HD11	1:B:786:LEU:HD21	1.88	0.54
1:A:704:PHE:CD1	1:A:716:ILE:HD13	2.43	0.54
1:B:582:ILE:HD11	1:B:604:TYR:HA	1.91	0.52
1:B:704:PHE:CD1	1:B:716:ILE:HD13	2.43	0.52
1:A:650:TYR:O	1:A:725:LEU:HD12	2.10	0.51
1:C:712:MSE:SE	1:C:716:ILE:HD12	2.61	0.51
1:B:548:TRP:CZ3	1:B:630:LEU:HD23	2.47	0.50
1:A:582:ILE:HD11	1:A:604:TYR:HA	1.92	0.49
1:A:712:MSE:SE	1:A:716:ILE:CD1	3.10	0.49
1:A:741:GLU:O	1:A:745:GLN:HG2	2.12	0.49
1:A:772:LEU:HD23	1:A:773:MSE:HE2	1.94	0.49
1:C:712:MSE:HG2	1:C:773:MSE:HE3	1.94	0.49
1:A:657:ARG:HG2	1:A:658:ASN:ND2	2.27	0.48
1:A:647:MSE:HE3	1:A:653:ARG:HB3	1.95	0.48
1:A:657:ARG:HG2	1:A:658:ASN:CG	2.34	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:704:PHE:HD1	1:A:716:ILE:HD13	1.80	0.47
1:A:620:CYS:O	1:A:623:GLN:HB2	2.14	0.47
1:B:677:GLN:NE2	1:B:780:LYS:O	2.48	0.45
1:B:712:MSE:HE2	1:B:772:LEU:CD2	2.47	0.45
1:C:555:HIS:N	1:C:555:HIS:ND1	2.65	0.45
1:C:723:GLU:OE1	1:C:727:ILE:HD11	2.17	0.44
1:A:662:ASP:O	1:A:666:LYS:HG3	2.18	0.44
1:A:652:LEU:HD13	1:A:725:LEU:HD21	2.00	0.43
1:C:704:PHE:CD1	1:C:716:ILE:HD13	2.54	0.43
1:C:517:LEU:HD23	1:C:550:LEU:HD12	2.01	0.43
1:B:705:THR:HA	1:B:713:VAL:HG11	2.01	0.43
1:C:545:ALA:HB2	1:C:633:HIS:O	2.19	0.43
1:A:704:PHE:CD1	1:A:716:ILE:CD1	3.03	0.42
1:A:545:ALA:HB2	1:A:633:HIS:O	2.20	0.42
1:A:561:LEU:HD12	1:A:637:GLU:HG3	2.01	0.42
1:C:582:ILE:HD11	1:C:604:TYR:HA	2.02	0.42
1:A:534:LEU:HD23	1:A:534:LEU:HA	1.90	0.41
1:B:566:ILE:HG22	1:B:566:ILE:O	2.19	0.41
1:C:690:LEU:HD11	1:C:752:LEU:HD21	2.02	0.41
1:C:512:SER:HB3	1:C:534:LEU:HD11	2.01	0.41
1:A:705:THR:HA	1:A:713:VAL:HG11	2.02	0.41
1:C:619:TYR:CE1	1:C:623:GLN:HB3	2.56	0.41
1:B:625:PHE:O	1:B:629:VAL:HG23	2.21	0.41
1:B:640:PHE:O	1:B:644:VAL:HG23	2.22	0.40
1:A:759:LEU:HB3	1:A:760:PRO:HD3	2.04	0.40
1:B:655:LEU:O	1:B:660:PHE:HA	2.21	0.40
1:C:647:MSE:HE3	1:C:653:ARG:HB3	2.04	0.40

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	285/310 (92%)	278 (98%)	7 (2%)	0	100	100
1	B	252/310 (81%)	242 (96%)	10 (4%)	0	100	100
1	C	286/310 (92%)	280 (98%)	5 (2%)	1 (0%)	37	47
All	All	823/930 (88%)	800 (97%)	22 (3%)	1 (0%)	48	60

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	657	ARG

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	229/266 (86%)	225 (98%)	4 (2%)	56	72
1	B	164/266 (62%)	162 (99%)	2 (1%)	67	81
1	C	227/266 (85%)	227 (100%)	0	100	100
All	All	620/798 (78%)	614 (99%)	6 (1%)	73	85

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	537	SER
1	A	572	SER
1	A	658	ASN
1	A	662	ASP
1	B	712	MSE
1	B	725	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 32 ligands modelled in this entry, 32 are unknown - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

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

6.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

6.4 Ligands

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers

EDS failed to run properly - this section is therefore empty.