

Integrative Structure Validation Report

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The following software was used in the production of this report:

IHMValidation Version 3.0


Python-IHM Version 2.5

MolProbity Version 4.5.2

PDB ID	9A49 pdb_00009a49
PDB-Dev ID	PDBDEV_00000230
Structure Title	Structure of the alpha7nAChR Transmembrane and Intracellular Domains in Complex with the PICK1 PDZ Domain
Structure Authors	Bondarenko, V; Chen, Q; Tang, P
Deposited on	2023-12-21

This is a PDB-IHM Structure Validation Report.

We welcome your comments at helpdesk@pdb-ihm.org

A user guide is available at https://pdb-ihm.org/validation_help.html with specific help available everywhere you see the  symbol.

List of references used to build this report is available [here](#).

1. Overview

1.1. Summary

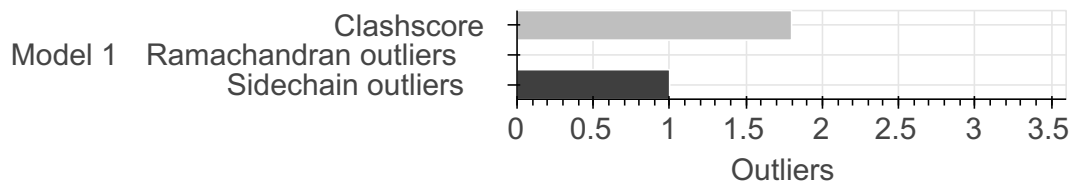
This entry consists of 1 model(s). A total of 9 dataset(s) were used to build this entry.

Name	Type	Count
NMR data	Experimental data	7
Experimental model	Starting model	2

1.2. Overall quality

This validation report contains model quality assessments for all structures, data quality and fit to model assessments for SAS and crosslinking-MS datasets. Data quality and fit to model assessments for other datasets and model uncertainty are under development. Number of plots is limited to 256.

Model Quality: MolProbity Analysis ?



2. Model Details ?

2.1. Ensemble information ?

This entry consists of 0 distinct ensemble(s).

2.2. Representation ?

This entry has 1 representation(s).

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
1	1	1	CHRNA7-FAM7A fusion protein	A	264	-	1-264	100.00 / 100.00	Atomic
				B					
				C					
				D					
				E					
		2	PRKCA-binding protein	F	86	-	1-86	100.00 / 100.00	Atomic

2.3. Datasets used for modeling ?

There are 9 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	NMR data	Not available	Not available
2	NMR data	Not available	Not available
3	Experimental model	PDB	pdb_00007rpm
4	Experimental model	PDB	pdb_00002lui
5	NMR data	Not available	Not available
6	NMR data	BMRB	52246
7	NMR data	BMRB	52247

ID	Dataset type	Database name	Data access code
8	NMR data	BMRB	52248
9	NMR data	BMRB	52249

2.4. Methodology and software ?

This entry is a result of 1 distinct protocol(s).

Step number	Protocol ID	Method name	Method type	Method description	Number of computed models	Multi state modeling	Multi scale modeling
1	1	docking	Not available	docking using distance restraints between two proteins	Not available	False	False
1	1	docking	Not available	docking using alpha7nAChR E222, V226, E229, W230 as interface residues between two proteins (obtained from alpha7nAChR CSP NMR data)	Not available	False	False
1	1	docking	Not available	docking using PICK1 I15, I17, I19 as interface residues between two proteins (obtained from PICK1 CSP NMR data)	Not available	False	False
2	1	refinement	Not available	Not available	Not available	False	False
3	1	refinement	Not available	Not available	Not available	False	False
4	1	refinement	Not available	Not available	Not available	False	False
5	1	refinement	Not available	Not available	Not available	False	False

There are 4 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	HADDOCK	2.40	docking	https://wenmr.science.uu.nl/haddock2.4/
2	PHENIX	Not available	refinement	https://phenix-online.org/
4	Chiron	Not available	refinement	https://dokhlab.med.psu.edu/chiron/login.php
3	MolProbity	Not available	refinement	http://molprobity.biochem.duke.edu/

3. Data quality ?

3.4. NMR ?

Validation for this section is under development.

4. Model quality ?

For models with atomic structures, MolProbity analysis is performed. For models with coarse-grained or multi-scale structures, excluded volume analysis is performed.

4.1b. MolProbity Analysis

Excluded volume satisfaction for the models in the entry are listed below. The Analysed column shows the number of particle-particle or particle-atom pairs for which excluded volume was analysed.

Standard geometry: bond outliers

There are no bond length outliers.

Standard geometry: angle outliers

There are no bond angle outliers.

Too-close contacts

The following all-atom clashscore is based on a MolProbity analysis. All-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The table below contains clashscores for all atomic models in this entry.

Model ID	Clash score	Number of clashes
1	1.80	39

There are 39 clashes. The table below contains the detailed list of all clashes based on a MolProbity analysis. Bad clashes are ≥ 0.4 Angstrom.

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
A:121:ASP:O	A:124:ARG:NH1	0.72	1	1
E:121:ASP:O	E:124:ARG:NH1	0.72	1	1
A:200:ASP:OD1	E:199:GLY:N	0.67	1	1
A:91:ASP:OD2	A:94:GLY:N	0.66	1	1
F:9:LYS:NZ	F:75:VAL:O	0.64	1	1
B:192:HIS:NE2	C:198:GLU:O	0.60	1	1
A:113:LEU:HD12	A:114:ARG:HG2	0.60	1	1
A:192:HIS:NE2	B:198:GLU:O	0.60	1	1
A:218:ARG:NH2	F:18:SER:OG	0.58	1	1
C:192:HIS:NE2	D:198:GLU:O	0.58	1	1
A:115:MET:N	A:120:GLU:OE1	0.57	1	1
E:115:MET:N	E:120:GLU:OE1	0.56	1	1
F:28:CYS:O	F:29:LEU:HD23	0.55	1	1
F:70:LYS:NZ	F:74:GLU:OE2	0.55	1	1
F:10:ASP:OD1	F:11:ALA:N	0.54	1	1
F:41:ALA:HA	F:46:VAL:HG22	0.53	1	1
C:174:GLY:O	C:178:GLY:N	0.53	1	1
E:113:LEU:HD12	E:114:ARG:HG2	0.53	1	1
E:91:ASP:OD2	E:94:GLY:N	0.51	1	1
D:192:HIS:N	D:195:GLN:O	0.51	1	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
F:22:GLY:O	F:65:LYS:NZ	0.51	1	1
D:65:GLN:NE2	D:69:SER:OG	0.49	1	1
B:170:THR:N	B:171:PRO:CD	0.47	1	1
F:64:THR:HG22	F:65:LYS:N	0.46	1	1
E:113:LEU:HD12	E:114:ARG:N	0.45	1	1
A:70:THR:O	A:74:VAL:HG22	0.44	1	1
A:174:GLY:O	A:178:GLY:N	0.44	1	1
F:75:VAL:O	F:75:VAL:HG23	0.43	1	1
A:234:ALA:O	A:238:ASP:N	0.43	1	1
A:192:HIS:N	A:195:GLN:O	0.42	1	1
B:192:HIS:N	B:195:GLN:O	0.42	1	1
E:40:LEU:O	E:43:THR:OG1	0.42	1	1
B:9:ILE:HB	B:10:PRO:HD3	0.41	1	1
C:170:THR:N	C:171:PRO:CD	0.41	1	1
E:221:ASP:O	E:225:ALA:N	0.41	1	1
F:55:VAL:O	F:55:VAL:HG13	0.41	1	1
A:22:PHE:HB3	A:242:LEU:HD13	0.41	1	1
E:260:ALA:N	E:261:PRO:CD	0.40	1	1
A:22:PHE:CB	A:242:LEU:HD13	0.40	1	1

Torsion angles: Protein backbone ?

In the following table, Ramachandran outliers are listed. The Analysed column shows the number of residues for which the backbone conformation was analysed.

Model ID	Analysed	Favored	Allowed	Outliers
1	1394	1369	25	0

Torsion angles : Protein sidechains ?

In the following table, sidechain rotameric outliers are listed. The Analysed column shows the number of residues for which the sidechain conformation was analysed.

Model ID	Analysed	Favored	Allowed	Outliers
1	1203	1199	3	1

There are 1 unique sidechain outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
F	29	LEU	1

5. Fit to Data Used for Modeling Assessment ?

5.4. NMR ?

Validation for this section is under development.

6. Fit to Data Used for Validation Assessment ?

Validation for this section is under development.

Acknowledgments

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