Integrative Structure Validation Report

September 10, 2024 - 10:49 PM PDT

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

Python-IHM Version 1.3
MolProbity Version 4.5.2
Integrative Modeling Validation Version 1.2

PDB ID	9A56
PDB-Dev ID	PDBDEV_00000263
Structure Title	Integrative model of RPOB-NUSG by crosslinking MS and deep learning
Structure Authors	Kolja Stahl; Oliver Brock; Juri Rappsilber

This is a PDB-Dev IM Structure Validation Report for a publicly released PDB-Dev entry.

We welcome your comments at pdb-dev@mail.wwpdb.org

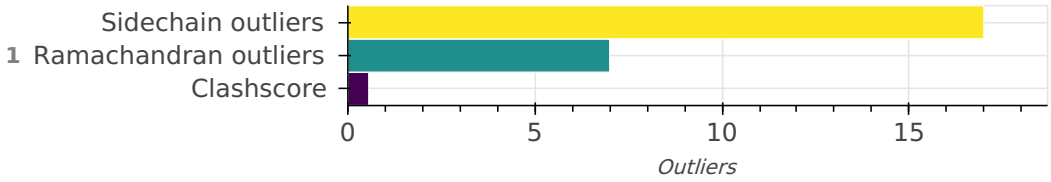
A user guide is available at https://pdb-dev.wwpdb.org/validation_help.html with specific help available everywhere you see the ? symbol.

List of references used to build this report is available here.

Overall quality

This validation report contains model quality assessments for all structures, data quality assessment for SAS datasets and fit to model assessments for SAS 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



Ensemble information

This entry consists of 0 distinct ensemble(s).

Summary

This entry consists of 1 unique models, with 2 subunits in each model. A total of 1 datasets or restraints were used to build this entry. Each model is represented by 0 rigid bodies and 2 flexible or non-rigid units.

Entry composition

There is 1 unique type of models in this entry. This model is titled None/None.

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
1	1	1	RPOB_BACSU	A	A	1193
1	2	2	NUSG_BACSU	B	B	177

Datasets used for modeling

There is 1 unique dataset used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Crosslinking-MS data	PRIDE	PXD035508

Representation

This entry has only one representation and includes 0 rigid bodies and 2 flexible units.

Chain ID	Rigid bodies	Non-rigid segments

Chain ID	Rigid bodies	Non-rigid segments
A	-	1-1193
B	-	1-177

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	AlphaLink2	AlphaLink2	None	1	False	False

There is 1 software package reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	AlphaLink2	1.0	model building	https://github.com/Rappsilber-Laboratory/AlphaLink2

Data quality

Crosslinking-MS

Validation for this section is under development.

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.

Standard geometry: bond outliers

There are 10753 bond outliers in this entry. A summary is provided below, and a detailed list of outliers can be found here.

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CB--HB	1.09	0.97	282

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CE--HE3	1.09	0.97	120
CG2--HG23	1.09	0.97	282
CA--HA2	1.09	0.97	116
CG--HG3	1.09	0.97	444
CB--HB2	1.09	0.97	972
CE--HE2	1.09	0.97	120
CA--HA	1.09	0.97	1254
CG--HG2	1.09	0.97	444
CB--HB3	1.09	0.97	972
CD--HD2	1.09	0.97	235
CD--HD3	1.09	0.97	235
CG2--HG21	1.09	0.97	282
CD1--HD11	1.09	0.97	197
CD1--HD13	1.09	0.97	197
NZ--HZ2	1.01	0.89	82
CG2--HG22	1.09	0.97	282
CA--HA3	1.09	0.97	116
CG1--HG11	1.09	0.97	125
OG1--HG1	0.96	0.84	69
CG1--HG12	1.09	0.97	213
NZ--HZ1	1.01	0.89	82
CD1--HD12	1.09	0.97	197
CD2--HD22	1.09	0.97	109

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CD2--HD21	1.09	0.97	109
NZ--HZ3	1.01	0.89	82
CG1--HG13	1.09	0.97	213
CD2--HD23	1.09	0.97	109
CB--HB1	1.09	0.97	69
OH--HH	0.96	0.84	47
CG--HG	1.09	0.97	109
N--H1	1.01	0.89	2
OG--HG	0.96	0.84	70
CE--HE1	1.09	0.97	38
N--H2	1.01	0.89	2
N--H3	1.01	0.89	2
SG--HG	1.33	1.20	1
SG--HG	1.34	1.20	3
CE2--HE2	1.08	0.93	92
ND2--HD21	1.01	0.86	58
NH1--HH11	1.01	0.86	90
N--H	1.01	0.86	1305
CD1--HD1	1.08	0.93	100
NE2--HE22	1.01	0.86	42
NH2--HH21	1.01	0.86	90
CE1--HE1	1.08	0.93	110
CZ--HZ	1.08	0.93	45
NE--HE	1.01	0.86	90

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CD2--HD2	1.08	0.93	110
NH1--HH12	1.01	0.86	90
NE2--HE21	1.01	0.86	42
ND2--HD22	1.01	0.86	58
NH2--HH22	1.01	0.86	90
ND1--HD1	1.01	0.86	16
CH2--HH2	1.08	0.93	8
CE3--HE3	1.08	0.93	8
CZ3--HZ3	1.08	0.93	8
NE1--HE1	1.01	0.86	8
NE2--HE2	1.01	0.86	2
CZ2--HZ2	1.08	0.93	8

Standard geometry: angle outliers

There are 46 angle outliers in this entry. A summary is provided below, and a detailed list of outliers can be found here.

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CA-CB-CG	112.60	118.07	1
CA-CB-CG	112.60	117.92	1
CB-CG-CD2	131.20	124.31	1
CA-CB-CA-CB-CA-CB-CG	112.60	117.52	1
OE1-CD-NE2	122.60	117.69	1
NE-CZ-NH2	119.20	114.80	1
CA-CB-CG	112.60	117.49	2
CA-CB-CG	112.60	117.48	1
C-N-CA-CB-CG	112.60	117.44	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CA-CB-CG	112.60	117.43	1
OE1-CD-NE2	122.60	117.78	1
OE1-CD-NE2	122.60	117.80	1
CB-CG-CD2	131.20	124.96	1
CA-CB-CG	112.60	117.37	1
OD1-CG-ND2	122.60	117.90	1
OE1-CD-NE2	122.60	117.93	1
CA-CB-CG	112.60	117.20	1
OE1-CD-NE2	122.60	118.10	1
CB-CG-CD2	131.20	125.38	2
CA-CB-CG	112.60	117.08	1
CA-CB-CG	112.60	117.07	1
OE1-CD-NE2	122.60	118.16	1
OE1-CD-NE2	122.60	118.17	2
OD1-CG-ND2	122.60	118.17	1
OE1-CD-NE2	122.60	118.25	1
OE1-CD-CA-CB-CG	112.60	116.86	1
OE1-CD-NE2	122.60	118.39	1
OE1-CD-NE2	122.60	118.40	1
CA-CB-CG	113.80	117.99	1
OD1-CG-ND2	122.60	118.43	1
CA-C-CB-CG-OE1-CD-NE2	122.60	118.50	1
CD-NE-CZ	124.40	130.12	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
OE1-CD-NE2	122.60	118.51	1
OD1-CG-ND2	122.60	118.53	1
CD-NE-OE1-CD-OD1-CG-ND2	122.60	118.56	1
OE1-CD-NE2	122.60	118.57	2
CA-CB-CG	112.60	108.57	1
OE1-CD-CA-CB-CG	113.80	117.81	1
OE1-CD-NE2	122.60	118.60	1
HZ1-NZ-HZ2	96.97	109.00	1
HZ2-NZ-HZ3	96.00	109.00	1
C-N-H	109.35	124.30	1

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 the models in this entry.

Model ID	Clash score	Number of clashes
1	0.56	12

All 12 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:90:ALA:HB2	A:118:ILE:HD11	0.778
1	A:791:HIS:CE1	A:118:ILE:HD11	0.521
1	A:90:ALA:CB	A:781:LEU:HD12	0.501
1	A:777:MET:HG3	A:483:LYS:HE3	0.496
1	A:471:MET:HE1	A:714:LYS:HE2	0.477
1	A:687:ALA:O	B:23:GLU:OE1	0.441
1	B:19:LYS:HE3	A:954:ASP:HB3	0.440

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:781:LEU:HD11	A:374:LYS:HE2	0.423
1	A:269:ASN:OD1	A:910:ARG:HH22	0.416
1	A:85:ASP:CG	B:74:ASP:HB3	0.411

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	Analyzed	Favored	Allowed	Outliers
1	1366	1316	43	7

Detailed list of outliers are tabulated below.

Torsion angles: Protein sidechains

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

Model ID	Analyzed	Favored	Allowed	Outliers
1	1185	1129	39	17

Detailed list of outliers are tabulated below.

Model ID	Chain	Residue ID	Residue type
1	A	2	THR
1	A	23	VAL
1	A	48	MET
1	A	59	THR
1	A	223	LYS
1	A	255	LEU
1	A	319	LEU
1	A	753	LEU
1	A	802	THR
1	A	852	THR

Model ID	Chain	Residue ID	Residue type
1	A	881	HIS
1	A	1044	VAL
1	A	1048	LEU
1	A	1167	ASP
1	A	1169	LEU
1	A	1185	VAL
1	A	1190	VAL

Fit of model to data used for modeling

Crosslinking-MS

Validation for this section is under development.

Fit of model to data used for validation

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Acknowledgements

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