Integrative Structure Validation Report ?

July 22, 2024 - 04:05 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	9A0C
PDB-Dev ID	PDBDEV_00000048
Structure Title	Refined structure of MR78 Antibody in complex with Marburg glycoprotein using Rosetta
Structure Authors	Sangha AK; Dong J; Williamson L; Hashiguchi T; Saphire EO; Crowe JE; Meiler J

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

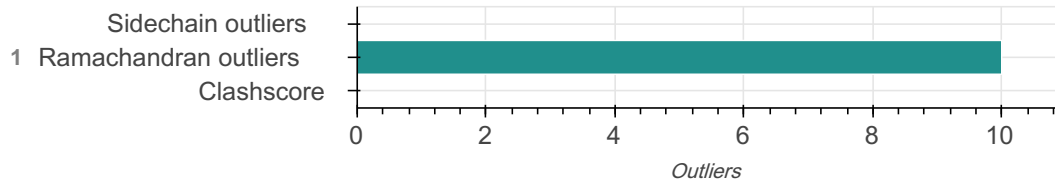*We welcome your comments at pdb-dev@mail.wwpdb.org*

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 4 subunits in each model. A total of 2 datasets or restraints were used to build this entry. Each model is represented by 0 rigid bodies and 4 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	Marburg Glycoprotein 1	M	M	152
1	2	2	Marburg Glycoprotein 2	N	N	83
1	3	3	MR78 antobody heavy chain	O	O	106
1	4	4	MR78 antibody light chain	P	P	124

Datasets used for modeling ?

There are 2 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Experimental model	PDB	3X2D
2	Other	PDB	5UQY

Representation ?

This entry has only one representation and includes 0 rigid bodies and 4 flexible units

Chain ID	Rigid bodies	Non-rigid segments
M	-	1-152
N	-	1-83
O	-	1-106
P	-	1-124

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	–	Rosetta refinement	None	–	False	False

There is 1 software package reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	ROSETTA	Not available	model building	https://github.com/RosettaCommons

Data quality ?

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 3545 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
CA--HA	1.07	0.97	5
CB--HB3	1.07	0.97	1
CB--HB	1.07	0.97	1
CG1--HG12	1.08	0.97	7
CB--HB2	1.08	0.97	35
CB--HB3	1.08	0.97	29
CA--HA2	1.08	0.97	3
CD1--HD13	1.08	0.97	6
CA--HA	1.08	0.97	54
CB--HB	1.08	0.97	15
CA--HA3	1.08	0.97	4
CG--HG2	1.08	0.97	2
CG2--HG23	1.08	0.97	4
CD--HD3	1.08	0.97	1
CG--HG3	1.08	0.97	3
CG--HG	1.08	0.97	5
CD1--HD11	1.08	0.97	5
CD2--HD22	1.08	0.97	1
CG1--HG13	1.08	0.97	2
CD1--HD12	1.08	0.97	4
CG2--HG21	1.08	0.97	2
CD2--HD21	1.08	0.97	4
CD2--HD23	1.08	0.97	4

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CG1--HG11	1.08	0.97	1
CG2--HG22	1.08	0.97	4
CB--HB1	1.08	0.97	1
CE--HE1	1.08	0.97	1
CA--HA	1.09	0.97	348
CB--HB2	1.09	0.97	278
CG2--HG22	1.09	0.97	88
CG2--HG23	1.09	0.97	88
CG--HG2	1.09	0.97	87
CG1--HG11	1.09	0.97	26
CG--HG	1.09	0.97	36
CG--HG3	1.09	0.97	85
CA--HA2	1.09	0.97	36
CD--HD3	1.09	0.97	42
CB--HB3	1.09	0.97	286
CG2--HG21	1.09	0.97	90
CG1--HG13	1.09	0.97	52
CD1--HD12	1.09	0.97	64
CD1--HD13	1.09	0.97	62
CD2--HD22	1.09	0.97	40
CB--HB	1.09	0.97	76
CD2--HD21	1.09	0.97	37
CD1--HD11	1.09	0.97	63

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CA--HA3	1.09	0.97	35
CB--HB1	1.09	0.97	25
CE--HE2	1.09	0.97	28
CG1--HG12	1.09	0.97	47
CD2--HD23	1.09	0.97	37
OG--HG	0.96	0.84	48
CD--HD2	1.09	0.97	43
NZ--HZ3	1.01	0.89	22
OH--HH	0.96	0.84	18
CE--HE1	1.09	0.97	5
OG1--HG1	0.96	0.84	35
NZ--HZ1	1.01	0.89	21
NZ--HZ2	1.01	0.89	21
CE--HE3	1.09	0.97	28
N--H3	1.01	0.89	3
N--H2	1.01	0.89	3
N--H1	1.01	0.89	3
CD--HD3	1.10	0.97	19
OG--HG	0.97	0.84	4
CD--HD2	1.10	0.97	19
CG--HG3	1.10	0.97	21
OH--HH	0.97	0.84	6
CA--HA	1.10	0.97	19

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CB--HB2	1.10	0.97	21
CB--HB3	1.10	0.97	18
NZ--HZ2	1.02	0.89	1
NZ--HZ1	1.02	0.89	1
CG--HG2	1.10	0.97	20
OG1--HG1	0.97	0.84	3
N--H	0.99	0.86	1
N--H	1.00	0.86	15
NE2--HE21	1.00	0.86	23
ND2--HD21	1.00	0.86	19
ND2--HD22	1.00	0.86	19
NE2--HE22	1.00	0.86	23
ND1--HD1	1.00	0.86	2
ND1--HD1	1.01	0.86	1
N--H	1.01	0.86	377
NE1--HE1	1.01	0.86	10
NH2--HH22	1.01	0.86	18
ND2--HD21	1.01	0.86	1
ND2--HD22	1.01	0.86	1
CE1--HE1	1.08	0.93	3
NH1--HH12	1.01	0.86	17
NE--HE	1.01	0.86	8
NH1--HH11	1.01	0.86	16

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
NE2--HE2	1.01	0.86	4
NH2--HH21	1.01	0.86	12
CD2--HD2	1.08	0.93	8
CZ3--HZ3	1.08	0.93	2
CZ--HZ	1.08	0.93	1
CE2--HE2	1.08	0.93	2
CD1--HD1	1.08	0.93	4
NE--HE	1.02	0.86	10
N--H	1.02	0.86	47
CZ--HZ	1.09	0.93	17
NH2--HH21	1.02	0.86	6
CD1--HD1	1.09	0.93	48
CD2--HD2	1.09	0.93	41
CE2--HE2	1.09	0.93	40
CE1--HE1	1.09	0.93	46
CE3--HE3	1.09	0.93	10
CZ3--HZ3	1.09	0.93	8
NH1--HH11	1.02	0.86	2
NH1--HH12	1.02	0.86	1
CH2--HH2	1.09	0.93	10
CZ2--HZ2	1.09	0.93	10

Standard geometry: angle outliers ❓

There are 8 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

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CA-CB-CG	112.60	118.06	1
C-N-CA	121.70	129.81	1
CA-N-CD	112.00	118.16	1
CA-CB-CG	113.80	117.91	1
C-N-H	110.66	124.30	1
C-N-H	109.63	124.30	1
CD-N-H3	134.44	109.47	1
CD-N-H2	54.73	109.47	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	0.00	0

All 0 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

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	457	413	34	10

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	400	398	2	0

Detailed list of outliers are tabulated below.

Fit of model to data used for modeling ?

Fit of model to data used for validation ?

Validation for this section is under development.