

# Integrative Structure Validation Report

July 22, 2024 - 03:33 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	8ZZ6
PDB-Dev ID	PDBDEV_00000006
Structure Title	Serum Albumin Domain B Structure
Structure Authors	Belsom A; Schneider M; Fischer L; Brock O; Rappsilber 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](mailto:pdb-dev@mail.wwpdb.org)*

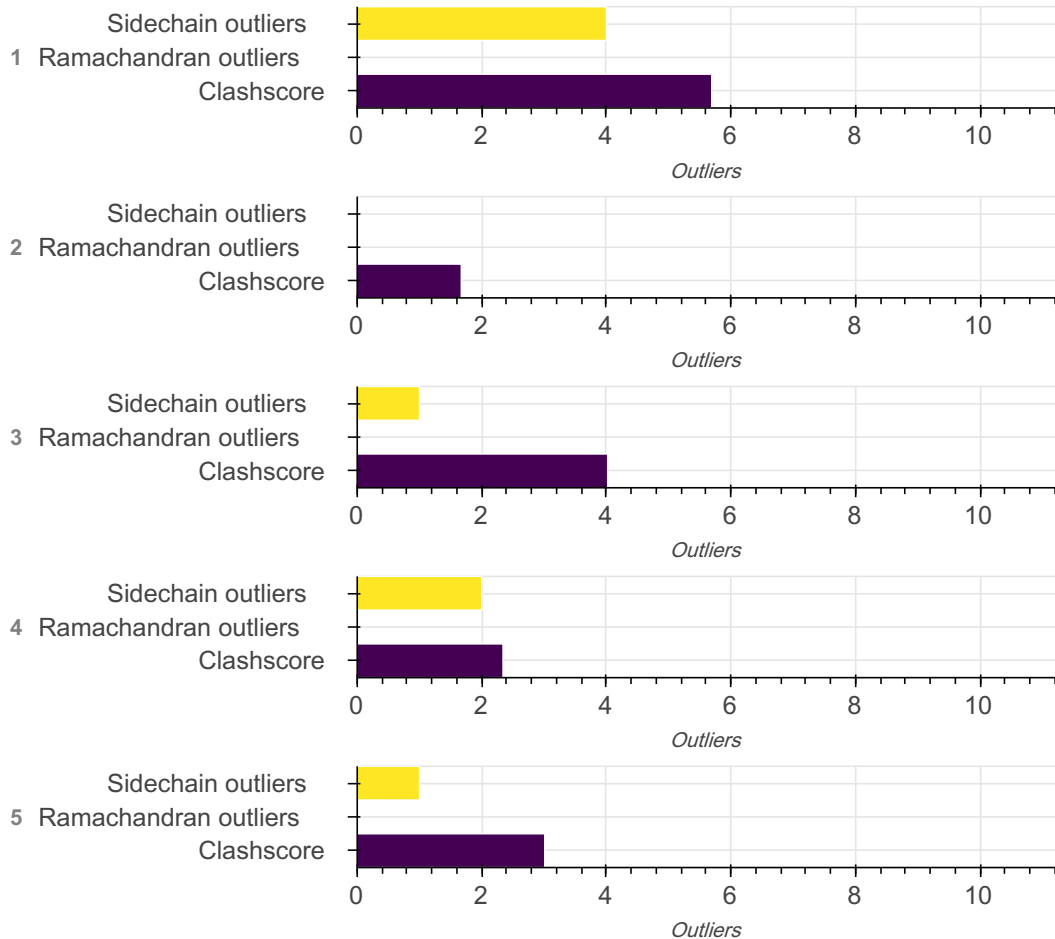
*A user guide is available at [https://pdb-dev.wwpdb.org/validation\\_help.html](https://pdb-dev.wwpdb.org/validation_help.html) with specific help available everywhere you see the  symbol.*

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

### Entry composition ?

*There are 5 unique types of models in this entry. These models are titled Best scoring model (domain B), 2nd best scoring model (domain B), 3rd best scoring model (domain B), 4th best scoring model (domain B), 5th best scoring model (domain B) respectively.*

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
1	1	1	HSA_B	A	A	189
2	1	1	HSA_B	A	A	189
3	1	1	HSA_B	A	A	189
4	1	1	HSA_B	A	A	189
5	1	1	HSA_B	A	A	189

### 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	Crosslinking-MS data	PRIDE	PXD001692
2	Other	File	10.5281/zenodo.1035833

### Representation

This entry has only one representation and includes 1 rigid bodies and 0 flexible units

Chain ID	Rigid bodies	Non-rigid segments
A	1-189:None	-

### 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
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Step number	Protocol ID	Method name	Method type	Method description	Number of computed models	Multi state modeling	Multi scale modeling
1	1	Model-based search (MBS) in Rosetta	Conformational search	None	5000	False	False

There are 2 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	<a href="#">Rosetta MBS</a>	Not available	Model Building	<a href="https://compbio.robotics.tu-berlin.de/rbo_aleph">https://compbio.robotics.tu-berlin.de/rbo_aleph</a>
2	<a href="#">EPC-map</a>	Not available	Contact Predictor	<a href="https://compbio.robotics.tu-berlin.de/epsilon">https://compbio.robotics.tu-berlin.de/epsilon</a>

## Data quality

### Crosslinking-MS

Validation for this section is under development.

## Model quality

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

### Standard geometry: bond outliers

There are 7400 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
N--H2	1.00	0.89	5
N--H1	1.00	0.89	5
N--H3	1.00	0.89	5
CB--HB2	1.09	0.97	780

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CB--HB3	1.09	0.97	780
CE--HE2	1.09	0.97	100
CA--HA3	1.09	0.97	15
CD1--HD13	1.09	0.97	125
CG2--HG23	1.09	0.97	110
CG--HG3	1.09	0.97	265
CA--HA	1.09	0.97	890
CG1--HG12	1.09	0.97	80
CB--HB	1.09	0.97	110
CB--HB1	1.09	0.97	105
CE--HE3	1.09	0.97	100
CG2--HG21	1.09	0.97	110
CG--HG2	1.09	0.97	265
CG2--HG22	1.09	0.97	110
CD--HD3	1.09	0.97	125
CD1--HD11	1.09	0.97	125
CD--HD2	1.09	0.97	125
NZ--HZ3	1.01	0.89	90
CG1--HG13	1.09	0.97	80
CD2--HD23	1.09	0.97	105
CG1--HG11	1.09	0.97	60
CA--HA2	1.09	0.97	15
CD1--HD12	1.09	0.97	125

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CG--HG	1.09	0.97	105
NZ--HZ2	1.01	0.89	90
NZ--HZ1	1.01	0.89	90
CD2--HD22	1.09	0.97	105
OH--HH	0.96	0.84	35
CD2--HD21	1.09	0.97	105
OG--HG	0.96	0.84	50
CE--HE1	1.09	0.97	10
OG1--HG1	0.96	0.84	30
SG--HG	1.33	1.20	55
CG--HG2	1.10	0.97	40
CB--HB3	1.10	0.97	40
CB--HB2	1.10	0.97	40
CG--HG3	1.10	0.97	40
CA--HA	1.10	0.97	40
CD--HD2	1.10	0.97	40
CD--HD3	1.10	0.97	40
ND2--HD22	1.00	0.86	20
NE2--HE22	1.00	0.86	25
ND2--HD21	1.00	0.86	20
NE2--HE21	1.00	0.86	25
NH2--HH22	1.01	0.86	35
N--H	1.01	0.86	900

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
NH1--HH12	1.01	0.86	35
NE1--HE1	1.01	0.86	5
NE2--HE2	1.01	0.86	25
NH1--HH11	1.01	0.86	35
NH2--HH21	1.01	0.86	35
NE--HE	1.01	0.86	35
CZ--HZ	1.09	0.93	45
CD1--HD1	1.09	0.93	85
CE2--HE2	1.09	0.93	80
CE3--HE3	1.09	0.93	5
CZ2--HZ2	1.09	0.93	5
CE1--HE1	1.09	0.93	105
CZ3--HZ3	1.09	0.93	5
CD2--HD2	1.09	0.93	105
CH2--HH2	1.09	0.93	5

### Standard geometry: angle outliers

There are 174 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
N-CA-CB	110.50	102.68	1
N-CA-CB	110.50	102.70	2
N-CA-CB	110.50	102.71	3
N-CA-CB	110.50	102.72	4
N-CA-CB	110.50	102.73	5

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
N-CA-CB	110.50	102.74	5
N-CA-CB	110.50	102.75	6
N-CA-CB	110.50	102.76	12
N-CA-CB	110.50	102.77	4
N-CA-CB	110.50	102.78	3
N-CA-CB	110.50	102.79	5
N-CA-CB	110.50	102.80	2
N-CA-CB	110.50	102.81	2
N-CA-CB	110.50	102.83	1
CZ-NE-HE	105.87	117.90	2
CZ-NE-HE	105.86	117.90	4
CZ-NE-HE	105.84	117.90	3
CZ-NE-HE	105.83	117.90	2
CZ-NE-HE	105.82	117.90	3
CZ-NE-HE	105.81	117.90	1
CZ-NE-HE	105.80	117.90	4
CZ-NE-HE	105.79	117.90	3
CZ-NE-HE	105.78	117.90	3
CZ-NE-HE	105.77	117.90	3
CZ-NE-HE	105.76	117.90	1
CZ-NE-HE	105.75	117.90	2
CZ-NE-HE	105.74	117.90	1
CZ-NE-HE	105.72	117.90	2



Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
H1-N-H2	97.23	109.47	1
H1-N-H3	97.22	109.47	1
H2-N-H3	97.21	109.47	1
H1-N-H3	97.20	109.47	1
H1-N-H2	97.19	109.47	2
H2-N-H3	97.19	109.47	1
H2-N-H3	97.18	109.47	1
H1-N-H3	97.18	109.47	1
H1-N-H2	97.17	109.47	1
H1-N-H2	97.16	109.47	1
H2-N-H3	97.16	109.47	1
H1-N-H3	97.16	109.47	1
H2-N-H3	97.14	109.47	1
H1-N-H3	97.13	109.47	1
CB-CG-HG2	122.72	109.00	2
CB-CG-HG2	122.74	109.00	2
CB-CG-HG2	122.75	109.00	4
CB-CG-HG2	122.76	109.00	1
CB-CG-HG2	122.77	109.00	4
CB-CG-HG2	122.78	109.00	1
CB-CG-HG2	122.79	109.00	1
CB-CG-HG2	122.80	109.00	2
CB-CG-HG2	122.81	109.00	2

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CB-CG-HG2	122.82	109.00	2
CB-CG-HG2	122.83	109.00	2
CB-CG-HG2	122.86	109.00	2
CB-CG-HG3	94.64	109.00	1
CB-CG-HG3	94.63	109.00	1
CB-CG-HG3	94.60	109.00	1
CB-CG-HG3	94.59	109.00	2
CB-CG-HG3	94.58	109.00	2
CB-CG-HG3	94.57	109.00	1
CB-CG-HG3	94.56	109.00	3
CB-CG-HG3	94.55	109.00	1
CB-CG-HG3	94.54	109.00	4
CB-CG-HG3	94.53	109.00	2
CB-CG-HG3	94.52	109.00	2
CB-CG-HG3	94.51	109.00	2
CB-CG-HG3	94.49	109.00	2
CB-CG-HG3	94.46	109.00	1
CA-CB-HB3	93.40	109.00	1
CA-CB-HB3	93.38	109.00	2
CA-CB-HB3	93.37	109.00	1
CA-CB-HB3	93.35	109.00	1
CA-CB-HB3	93.34	109.00	4
CA-CB-HB3	93.33	109.00	3

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CA-CB-HB3	93.32	109.00	3
CA-CB-HB3	93.31	109.00	2
CA-CB-HB3	93.29	109.00	2
CA-CB-HB3	93.28	109.00	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	5.69	17
2	1.67	5
3	4.02	12
4	2.34	7
5	3.01	9

All 50 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:122:LYS:H	A:122:LYS:HD2	0.606
1	A:37:LEU:O	A:37:LEU:HD23	0.534
1	A:37:LEU:C	A:37:LEU:HD23	0.523
1	A:182:GLU:HB2	A:183:PRO:HD3	0.522
1	A:122:LYS:HD2	A:122:LYS:N	0.520
1	A:122:LYS:CD	A:122:LYS:H	0.514
1	A:111:SER:O	A:115:CYS:SG	0.500
1	A:125:PHE:HD1	A:125:PHE:O	0.488
1	A:177:LYS:N	A:178:PRO:CD	0.486

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:133:TYR:HD1	A:133:TYR:O	0.464
1	A:182:GLU:N	A:183:PRO:CD	0.459
1	A:177:LYS:HB3	A:178:PRO:HD3	0.449
1	A:164:ASP:O	A:168:CYS:SG	0.440
1	A:156:LEU:O	A:159:CYS:HB2	0.437
1	A:85:LYS:O	A:88:CYS:SG	0.436
1	A:156:LEU:HA	A:156:LEU:HD12	0.434
1	A:125:PHE:C	A:125:PHE:CD1	0.428
2	A:85:LYS:O	A:88:CYS:SG	0.494
2	A:111:SER:O	A:115:CYS:SG	0.488
2	A:177:LYS:HB3	A:178:PRO:HD3	0.452
2	A:182:GLU:HB3	A:183:PRO:HD3	0.434
2	A:177:LYS:N	A:178:PRO:HD2	0.406
3	A:157:GLU:O	A:160:CYS:SG	0.570
3	A:41:HIS:HE1	A:52:CYS:SG	0.532
3	A:177:LYS:N	A:178:PRO:CD	0.517
3	A:182:GLU:N	A:183:PRO:CD	0.493
3	A:74:LEU:O	A:78:CYS:SG	0.478
3	A:41:HIS:CE1	A:52:CYS:SG	0.451
3	A:182:GLU:HB2	A:183:PRO:HD3	0.448
3	A:112:LYS:O	A:115:CYS:SG	0.440
3	A:18:LEU:HD23	A:59:LEU:HD21	0.435
3	A:177:LYS:HB3	A:178:PRO:HD3	0.418

Model ID	Atom-1	Atom-2	Clash overlap (Å)
3	A:155:THR:O	A:159:CYS:SG	0.417
3	A:84:GLU:O	A:88:CYS:SG	0.416
4	A:49:LEU:O	A:52:CYS:SG	0.689
4	A:50:LEU:O	A:50:LEU:HD23	0.560
4	A:182:GLU:N	A:183:PRO:CD	0.495
4	A:112:LYS:O	A:115:CYS:SG	0.488
4	A:182:GLU:HB3	A:183:PRO:HD3	0.472
4	A:84:GLU:O	A:88:CYS:SG	0.451
4	A:50:LEU:CD2	A:50:LEU:O	0.424
5	A:61:LYS:HA	A:64:CYS:SG	0.583
5	A:182:GLU:N	A:183:PRO:CD	0.489
5	A:75:LYS:HA	A:78:CYS:SG	0.472
5	A:75:LYS:O	A:78:CYS:SG	0.447
5	A:182:GLU:HB3	A:183:PRO:HD3	0.420
5	A:2:LEU:O	A:2:LEU:HD23	0.415
5	A:41:HIS:HA	A:44:CYS:HB2	0.413
5	A:177:LYS:N	A:178:PRO:CD	0.413
5	A:2:LEU:C	A:2:LEU:HD23	0.401

### 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	187	184	3	0
2	187	186	1	0

Model ID	Analyzed	Favored	Allowed	Outliers
3	187	186	1	0
4	187	182	5	0
5	187	185	2	0

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	165	157	4	4
2	165	165	0	0
3	165	161	3	1
4	165	162	1	2
5	165	163	1	1

Detailed list of outliers are tabulated below.

Model ID	Chain	Residue ID	Residue type
1	A	18	LEU
1	A	74	LEU
1	A	130	LEU
1	A	156	LEU
3	A	59	LEU
4	A	18	LEU
4	A	50	LEU
5	A	18	LEU

## Fit of model to data used for modeling ?

### Crosslinking-MS

Validation for this section is under development.

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## Fit of model to data used for validation ?

Validation for this section is under development.

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### *Acknowledgements*

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