

# Integrative Structure Validation Report ?

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

*Python-IHM Version 1.3*  
*Integrative Modeling Validation Version 1.2*

PDB ID	9A01
PDB-Dev ID	PDBDEV_00000037
Structure Title	Integrative structure of the canonical human COP9 Signalosome
Structure Authors	Gutierrez C; Chemmama IE; Mao H; Yu C; Echeverria I; Block SA; Rychnovsky SD; Zheng N; Sali A; Huang L

*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)*

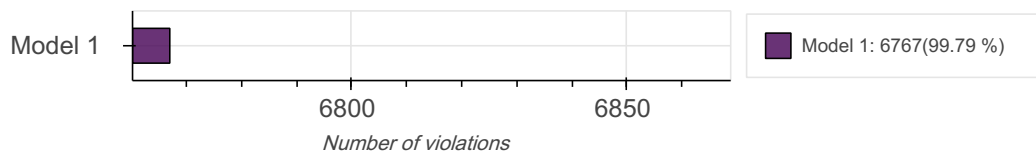
*A user guide is available at [https://pdb-dev.wwpdb.org/validation\\_help.html](https://pdb-dev.wwpdb.org/validation_help.html) with specific help available everywhere you see the ? symbol.*

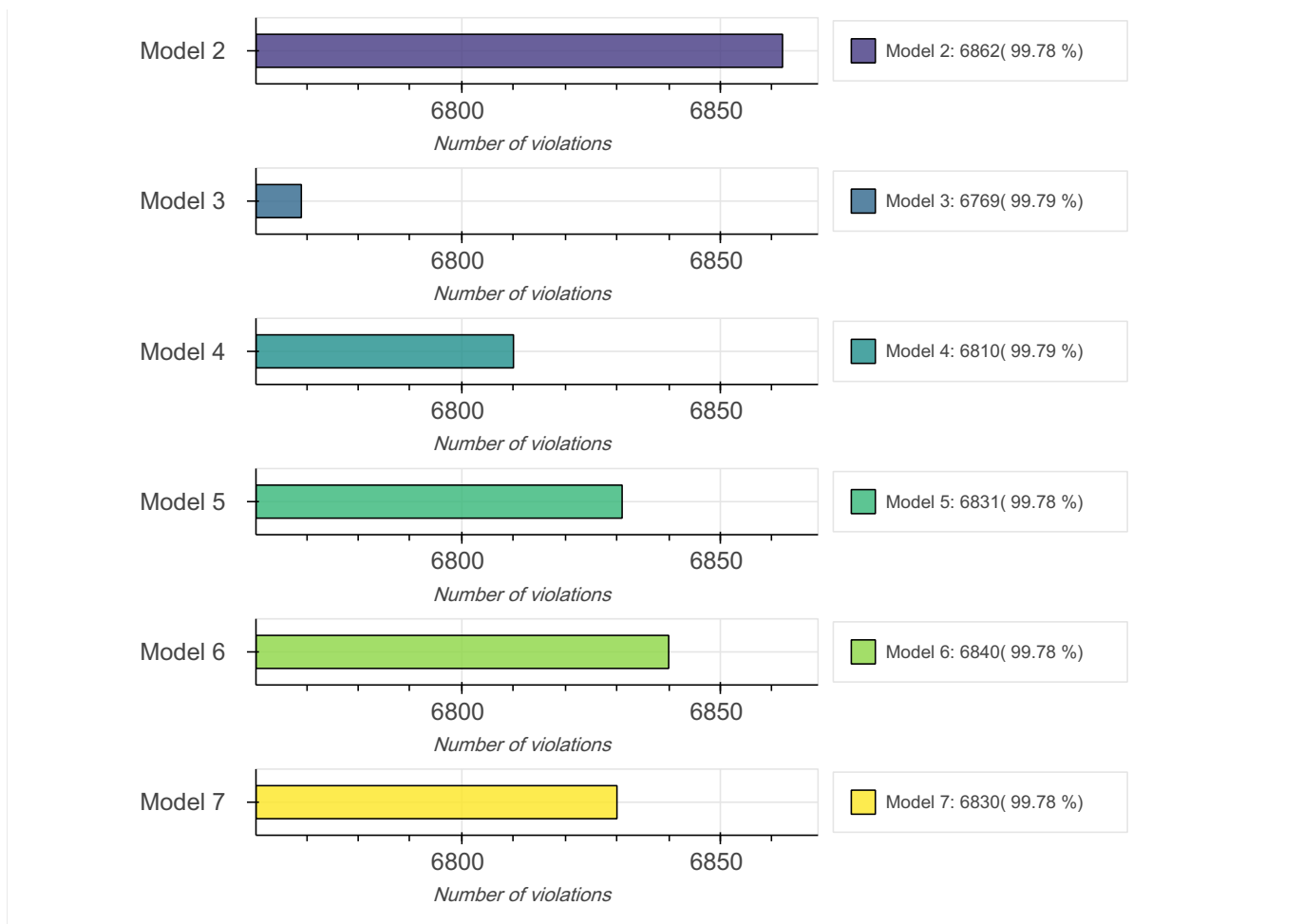
*List of references used to build this report is available [here](#).*

## 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: Excluded Volume Analysis





### Ensemble information ?

*This entry consists of 7 distinct ensemble(s).*

### Summary ?

*This entry consists of 7 unique models, with 8 subunits in each model. A total of 11 datasets or restraints were used to build this entry. Each model is represented by 23 rigid bodies and 28 flexible or non-rigid units.*

### Entry composition ?

*There are 7 unique types of models in this entry. These models are titled Cluster 0BMSO+DHSO+DSSO in state State\_0/None, Cluster 0BMSO+DHSO in state State\_0/None, Cluster 0DHSO+DSSO in state State\_0/None, Cluster 0BMSO+DSSO in state State\_0/None, Cluster 0DSSO in state State\_0/None, Cluster 0DHSO in state State\_0/None, Cluster 0BMSO in state State\_0/None 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	CSN1	A	A	491
1	2	2	CSN2	B	B	443
1	3	3	CSN3	C	C	423
1	4	4	CSN4	D	D	406
1	5	5	CSN5	E	E	334
1	6	6	CSN6	F	F	327
1	7	7	CSN7	G	G	264
1	8	8	CSN8	H	H	209
2	1	1	CSN1	A	A	491
2	2	2	CSN2	B	B	443
2	3	3	CSN3	C	C	423
2	4	4	CSN4	D	D	406
2	5	5	CSN5	E	E	334
2	6	6	CSN6	F	F	327
2	7	7	CSN7	G	G	264
2	8	8	CSN8	H	H	209
3	1	1	CSN1	A	A	491
3	2	2	CSN2	B	B	443
3	3	3	CSN3	C	C	423
3	4	4	CSN4	D	D	406
3	5	5	CSN5	E	E	334
3	6	6	CSN6	F	F	327
3	7	7	CSN7	G	G	264

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
3	8	8	CSN8	H	H	209
4	1	1	CSN1	A	A	491
4	2	2	CSN2	B	B	443
4	3	3	CSN3	C	C	423
4	4	4	CSN4	D	D	406
4	5	5	CSN5	E	E	334
4	6	6	CSN6	F	F	327
4	7	7	CSN7	G	G	264
4	8	8	CSN8	H	H	209
5	1	1	CSN1	A	A	491
5	2	2	CSN2	B	B	443
5	3	3	CSN3	C	C	423
5	4	4	CSN4	D	D	406
5	5	5	CSN5	E	E	334
5	6	6	CSN6	F	F	327
5	7	7	CSN7	G	G	264
5	8	8	CSN8	H	H	209
6	1	1	CSN1	A	A	491
6	2	2	CSN2	B	B	443
6	3	3	CSN3	C	C	423
6	4	4	CSN4	D	D	406
6	5	5	CSN5	E	E	334
6	6	6	CSN6	F	F	327

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
6	7	7	CSN7	G	G	264
6	8	8	CSN8	H	H	209
7	1	1	CSN1	A	A	491
7	2	2	CSN2	B	B	443
7	3	3	CSN3	C	C	423
7	4	4	CSN4	D	D	406
7	5	5	CSN5	E	E	334
7	6	6	CSN6	F	F	327
7	7	7	CSN7	G	G	264
7	8	8	CSN8	H	H	209

### Datasets used for modeling

*There are 11 unique datasets used to build the models in this entry.*

ID	Dataset type	Database name	Data access code
1	Experimental model	File	10.5281/zenodo.3827934
2	Comparative model	File	10.5281/zenodo.3827934
3	Experimental model	PDB	4D10
4	Experimental model	File	10.5281/zenodo.3827934
5	Comparative model	File	10.5281/zenodo.3827934
6	Crosslinking-MS data	File	10.5281/zenodo.3827934
7	Crosslinking-MS data	File	10.5281/zenodo.3827934
8	Crosslinking-MS data	File	10.5281/zenodo.3827934

ID	Dataset type	Database name	Data access code
9	Crosslinking-MS data	File	10.5281/zenodo.3827934
10	Crosslinking-MS data	File	10.5281/zenodo.3827934
11	Crosslinking-MS data	File	10.5281/zenodo.3827934

## Representation ?

*This entry has only one representation and includes 23 rigid bodies and 28 flexible units*

Chain ID	Rigid bodies	Non-rigid segments
A	44-107, 128-227, 246-426, 431-462	1-43, 108-127, 228-245, 427-430, 463-491
B	30-179, 192-289, 308-397, 417-443	1-29, 180-191, 290-307, 398-416
C	3-163, 177-361, 368-401	1-2, 164-176, 362-367, 402-423
D	3-131, 139-361, 365-406	1-2, 132-138, 362-364
E	25-283, 296-333	1-24, 284-295, 334-334
F	29-207, 215-267, 271-316	1-28, 208-214, 268-270, 317-327
G	8-158, 163-212	1-7, 159-162, 213-264
H	11-164, 194-209	1-10, 165-193

## 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	Replica exchange monte carlo	Sampling	None	5250000	False	True

*There are 3 software packages reported in this entry.*

ID	Software name	Software version	Software classification	Software location
1	<a href="#">IMP PMI module</a>	20200514.develop.17be5981c6	integrative model building	<a href="https://integrativemodeling.org">https://integrativemodeling.org</a>
2	<a href="#">Integrative Modeling Platform (IMP)</a>	20200514.develop.17be5981c6	integrative model building	<a href="https://integrativemodeling.org">https://integrativemodeling.org</a>
3	<a href="#">MODELLER</a>	SVN	comparative modeling	<a href="https://salilab.org/modeller/">https://salilab.org/modeller/</a>

### Data quality ?

#### Crosslinking-MS

Validation for this section is under development.

### Model quality ?

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

#### Excluded volume satisfaction ?

*Excluded volume satisfaction for the models in the entry are listed below.*

Models	Excluded Volume Satisfaction (%)	Number of violations
1	99.79	6767.0
2	99.78	6862.0
3	99.79	6769.0
4	99.79	6810.0
5	99.78	6831.0
6	99.78	6840.0
7	99.78	6830.0

## 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*

*Development of integrative model validation metrics, implementation of a model validation pipeline, and creation of a validation report for integrative structures, are funded by NSF ABI awards (DBI-1756248, DBI-2112966, DBI-2112967, DBI-2112968, and DBI-1756250). The [PDB-Dev team](#) and members of [Sali lab](#) contributed model validation metrics and software packages.*

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