Integrative Structure Validation Report

October 16, 2025 - 06:02 PM PDT

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	9AA2 | pdb_00009aa2
Structure Title	Integrative structure of Glutamate transporter homolog based in 3D localization AFM (3D-LAFM) density map
Structure Authors	Jiang, Y.; Wang, Z.; Scheuring, S.
Deposited on	2025-05-16

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

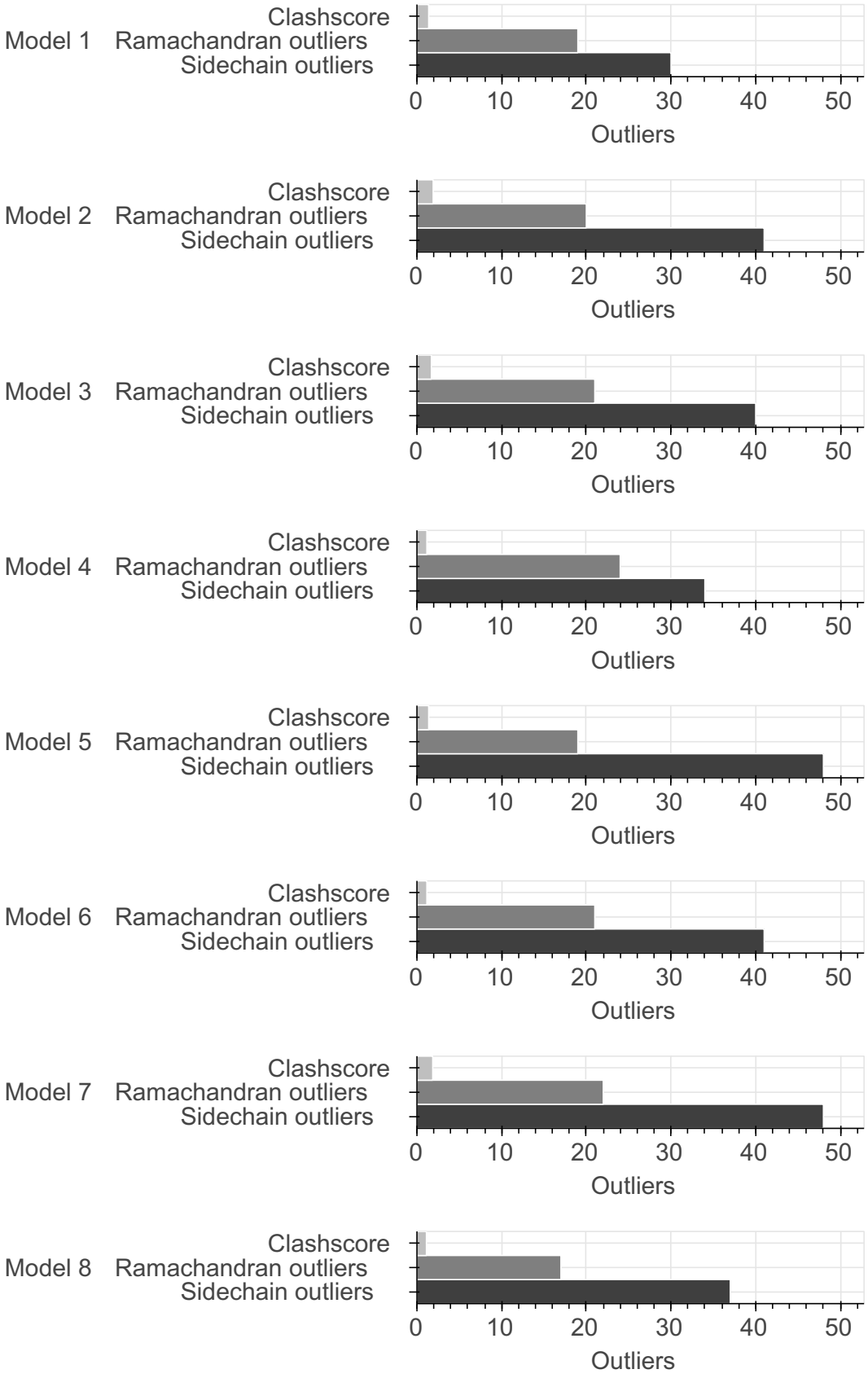
This entry consists of 10 model(s). A total of 2 dataset(s) were used to build this entry.

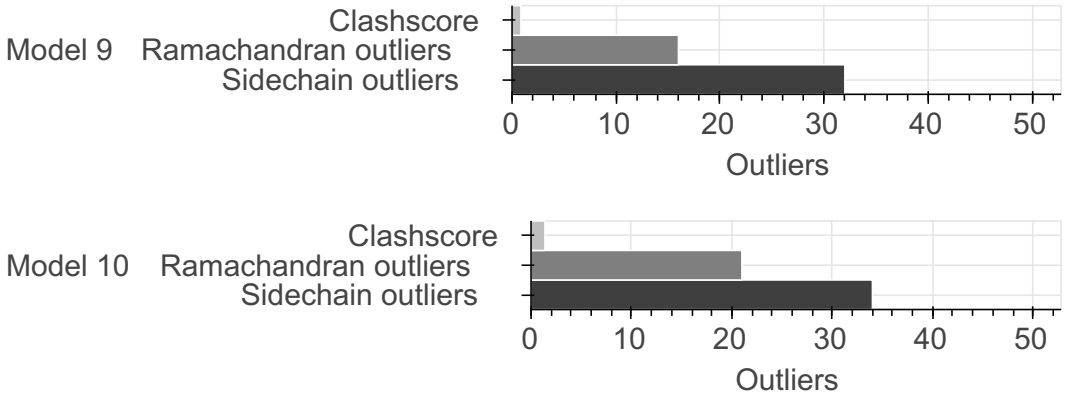
Name	Type	Count
Other	Experimental data	1
Experimental model	Starting model	1

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	1-10	1	Glutamate transporter homolog	A	415	-	1-415	100.00 / 100.00	Atomic
				B					
				C					

2.3. 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	Other	Zenodo	10.5281/zenodo.14171002
2	Experimental model	PDB	pdb_00004p19

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	Not available	Not available	Not available	Not available	False	False

There are 2 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	UCSF ChimeraX	Not available	model building	https://www.rbvi.ucsf.edu/chimerax/
2	Visual Molecular Dynamics (VMD)	Not available	model building	https://www.ks.uiuc.edu/Research/vmd/

3. Data quality

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-partice or particle-atom pairs for which excluded volume was analysed.

Standard geometry: bond outliers

There are 3775 bond length outliers in this entry (4.05% of 93250 assessed bonds). A summary is provided below. The output is limited to 100 rows.

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
A	109	HIS	ND1-CE1	11.60	1.44	1.32	10	6
B	32	HIS	ND1-CE1	11.31	1.43	1.32	1	4
A	35	HIS	ND1-CE1	10.24	1.42	1.32	5	7
B	311	LEU	C-N	9.32	1.46	1.33	2	4
A	363	HIS	ND1-CE1	9.23	1.41	1.32	4	7
B	261	LYS	C-N	9.15	1.46	1.33	4	2
A	171	VAL	C-N	9.13	1.46	1.33	9	3
B	405	ALA	C-N	9.09	1.46	1.33	2	1
C	218	HIS	C-N	8.89	1.45	1.33	2	3
C	90	PHE	C-N	8.86	1.45	1.33	6	2
A	411	GLU	C-N	8.83	1.45	1.33	4	3
A	210	TYR	C-N	8.75	1.45	1.33	10	2
C	310	ALA	C-N	8.74	1.45	1.33	3	4
B	217	VAL	C-N	8.69	1.45	1.33	1	1
A	218	HIS	ND1-CE1	8.60	1.41	1.32	7	3
B	402	THR	C-N	8.59	1.45	1.33	4	3
C	134	PRO	C-N	8.50	1.45	1.33	10	3

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
C	276	THR	C-N	8.49	1.45	1.33	4	3
A	318	PHE	C-N	8.43	1.45	1.33	5	1
C	99	ALA	C-N	8.34	1.45	1.33	2	2
B	172	ARG	NE-CZ	8.33	1.42	1.33	10	3
A	60	SER	C-N	8.32	1.45	1.33	10	5
B	282	ARG	C-N	8.32	1.45	1.33	1	6
A	32	HIS	C-N	8.28	1.44	1.33	4	2
C	187	GLU	C-N	8.25	1.44	1.33	1	3
B	384	ILE	C-N	8.24	1.44	1.33	6	6
B	7	VAL	C-N	8.14	1.44	1.33	10	2
C	42	GLY	C-N	8.12	1.44	1.33	2	2
A	32	HIS	ND1-CE1	8.07	1.40	1.32	4	2
C	224	ALA	C-N	8.00	1.44	1.33	2	4
A	120	HIS	ND1-CE1	7.97	1.40	1.32	7	4
A	278	PRO	C-N	7.96	1.44	1.33	3	3
B	114	GLY	C-N	7.94	1.44	1.33	7	4
C	131	ASP	C-N	7.92	1.44	1.33	10	6
C	233	GLY	CA-C	7.91	1.37	1.52	4	1
B	322	ASN	C-N	7.91	1.44	1.33	6	1
A	230	VAL	C-N	7.90	1.44	1.33	5	2
B	363	HIS	CG-CD2	7.89	1.44	1.35	8	1
B	404	THR	C-N	7.89	1.44	1.33	2	5
C	363	HIS	ND1-CE1	7.88	1.40	1.32	10	3
C	72	ARG	NE-CZ	7.86	1.41	1.33	6	8
C	154	ILE	C-N	7.83	1.44	1.33	6	2
A	47	ARG	CD-NE	7.80	1.57	1.46	4	6
B	363	HIS	ND1-CE1	7.79	1.40	1.32	5	7
A	172	ARG	CD-NE	7.78	1.57	1.46	7	3
A	80	ILE	C-N	7.78	1.44	1.33	9	2
B	207	LEU	C-N	7.74	1.44	1.33	2	2
B	327	HIS	CG-ND1	7.73	1.46	1.38	7	3
C	392	ARG	NE-CZ	7.72	1.41	1.33	8	5
B	218	HIS	ND1-CE1	7.68	1.40	1.32	8	5
C	351	PRO	C-N	7.67	1.44	1.33	6	4
C	405	ALA	C-N	7.64	1.44	1.33	10	3

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
B	389	ASP	C-N	7.61	1.44	1.33	3	6
A	271	ARG	NE-CZ	7.59	1.41	1.33	4	4
C	25	LEU	C-N	7.59	1.44	1.33	6	5
B	51	MET	C-N	7.59	1.44	1.33	3	5
C	167	GLU	C-N	7.56	1.43	1.33	7	6
A	29	GLY	C-N	7.55	1.43	1.33	8	1
B	259	HIS	ND1-CE1	7.54	1.40	1.32	8	5
C	406	ILE	C-N	7.54	1.43	1.33	3	1
A	270	THR	CB-OG1	7.54	1.31	1.43	5	1
C	51	MET	C-N	7.53	1.43	1.33	4	3
B	265	LEU	C-N	7.49	1.43	1.33	9	3
C	98	MET	C-N	7.49	1.43	1.33	9	2
B	75	ARG	NE-CZ	7.48	1.41	1.33	3	4
C	327	HIS	ND1-CE1	7.47	1.40	1.32	10	7
A	295	SER	C-N	7.47	1.43	1.33	2	3
C	11	ILE	C-N	7.46	1.43	1.33	6	2
A	68	ILE	C-N	7.46	1.43	1.33	4	3
B	260	ALA	C-N	7.44	1.43	1.33	3	4
C	358	LEU	C-N	7.44	1.43	1.33	8	3
B	36	THR	C-N	7.43	1.43	1.33	4	3
C	397	VAL	C-N	7.41	1.43	1.33	1	2
C	286	GLU	C-N	7.37	1.43	1.33	1	2
B	332	GLN	C-N	7.36	1.43	1.33	2	3
C	283	VAL	C-N	7.36	1.43	1.33	8	3
B	109	HIS	ND1-CE1	7.36	1.39	1.32	3	4
C	109	HIS	C-N	7.35	1.43	1.33	1	1
B	226	VAL	C-N	7.35	1.43	1.33	6	4
B	378	TYR	CZ-OH	7.35	1.53	1.38	4	2
A	104	PRO	C-N	7.35	1.43	1.33	2	4
C	361	VAL	C-N	7.31	1.43	1.33	8	2
B	383	GLY	C-N	7.31	1.43	1.33	9	1
B	32	HIS	CG-ND1	7.30	1.30	1.38	4	1
B	15	LEU	C-N	7.29	1.43	1.33	3	1
A	301	GLY	C-N	7.28	1.43	1.33	6	3
B	211	VAL	C-N	7.25	1.43	1.33	3	2

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
A	116	GLN	C-N	7.23	1.43	1.33	2	2
B	83	TYR	C-N	7.21	1.43	1.33	4	3
C	210	TYR	C-N	7.20	1.43	1.33	10	6
B	120	HIS	CG-ND1	7.19	1.30	1.38	8	3
A	170	LYS	C-N	7.19	1.43	1.33	6	1
B	124	PRO	C-N	7.18	1.43	1.33	5	1
B	410	THR	C-N	7.18	1.43	1.33	6	3
C	211	VAL	C-N	7.16	1.43	1.33	1	1
C	309	THR	CB-OG1	7.15	1.32	1.43	2	1
A	259	HIS	CD2-NE2	7.14	1.45	1.37	9	2
A	71	ALA	C-N	7.12	1.43	1.33	5	2
B	348	ALA	C-N	7.11	1.43	1.33	7	3
B	163	LEU	C-N	7.11	1.43	1.33	7	3

Standard geometry: angle outliers

There are 5487 bond angle outliers in this entry (4.31% of 127260 assessed bonds). A summary is provided below. The output is limited to 100 rows.

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
B	120	HIS	CA-CB-CG	13.14	126.94	113.80	6	4
A	373	ASN	CA-CB-CG	12.86	99.74	112.60	4	3
B	385	ASP	CA-CB-CG	12.72	125.32	112.60	7	4
B	75	ARG	NE-CZ-NH1	12.42	109.08	121.50	8	2
A	136	ASN	CA-CB-CG	11.30	123.90	112.60	3	5
C	363	HIS	CA-CB-CG	10.96	102.84	113.80	1	1
B	200	ALA	CA-C-N	10.75	133.03	116.90	5	9
C	298	LEU	CA-C-N	10.74	133.00	116.90	7	8
A	90	PHE	CA-CB-CG	10.67	103.13	113.80	9	4
B	183	ASN	CA-CB-CG	10.63	123.23	112.60	9	8
A	349	GLY	C-N-CA	10.45	140.50	121.70	5	6
C	205	PHE	CA-CB-CG	10.42	124.22	113.80	5	2
A	117	PHE	CA-CB-CG	10.38	103.42	113.80	5	6
C	123	PRO	CA-C-N	10.26	132.29	116.90	4	4
C	136	ASN	CA-CB-CG	10.20	122.80	112.60	1	5
A	385	ASP	CA-CB-CG	10.13	122.73	112.60	9	5
A	268	PHE	CA-CB-CG	10.11	123.91	113.80	9	3

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
B	243	PHE	CA-CB-CG	10.08	123.88	113.80	10	6
B	298	LEU	CA-C-N	9.96	131.84	116.90	7	9
C	75	ARG	NE-CZ-NH2	9.95	110.25	119.20	10	3
A	200	ALA	CA-C-N	9.88	131.72	116.90	1	9
C	296	PHE	CA-CB-CG	9.88	103.92	113.80	9	5
C	371	ASP	CA-CB-CG	9.79	122.39	112.60	8	3
A	327	HIS	ND1-CE1-NE2	9.73	118.13	108.40	8	5
C	271	ARG	C-N-CA	9.73	139.22	121.70	5	3
B	268	PHE	CA-CB-CG	9.69	123.49	113.80	5	6
B	138	PHE	CA-CB-CG	9.59	104.21	113.80	1	3
B	400	ASP	CA-CB-CG	9.58	122.18	112.60	6	3
A	147	LEU	CA-C-N	9.56	131.24	116.90	6	7
B	371	ASP	CA-CB-CG	9.49	122.09	112.60	8	3
B	205	PHE	CA-CB-CG	9.47	123.27	113.80	8	4
B	218	HIS	C-N-CA	9.29	138.43	121.70	10	6
A	327	HIS	CD2-NE2-CE1	9.07	99.93	109.00	8	6
A	287	MET	CG-SD-CE	9.05	81.00	100.90	2	2
B	392	ARG	NE-CZ-NH2	9.04	111.06	119.20	8	2
A	32	HIS	CA-CB-CG	9.03	122.83	113.80	7	3
C	138	PHE	CA-CB-CG	9.02	104.78	113.80	2	4
C	109	HIS	CD2-NE2-CE1	9.01	99.99	109.00	9	4
B	168	ASN	CA-CB-CG	8.91	103.69	112.60	1	7
C	109	HIS	CA-CB-CG	8.90	122.70	113.80	3	4
B	103	ASN	CA-C-N	8.87	130.20	116.90	9	4
B	109	HIS	CA-CB-CG	8.83	104.97	113.80	3	5
B	27	HIS	CA-CB-CG	8.82	104.98	113.80	3	5
A	27	HIS	ND1-CE1-NE2	8.82	117.22	108.40	6	4
A	121	GLN	OE1-CD-NE2	8.80	113.80	122.60	9	1
C	363	HIS	CD2-NE2-CE1	8.76	100.24	109.00	1	6
C	252	ASP	CA-CB-CG	8.75	103.85	112.60	10	5
A	243	PHE	CA-CB-CG	8.69	122.49	113.80	8	5
C	200	ALA	CA-C-N	8.59	129.78	116.90	6	9
B	131	ASP	CA-CB-CG	8.59	121.19	112.60	3	3
C	120	HIS	CA-CB-CG	8.58	122.38	113.80	1	4
B	172	ARG	NE-CZ-NH1	8.58	112.92	121.50	5	2

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
A	256	PHE	CA-CB-CG	8.58	122.38	113.80	10	8
C	263	ALA	C-CA-CB	8.56	97.66	110.50	8	1
B	39	LYS	CA-C-N	8.55	129.73	116.90	5	6
A	363	HIS	CA-CB-CG	8.53	122.33	113.80	9	4
B	363	HIS	CD2-NE2-CE1	8.52	100.48	109.00	9	7
B	194	ASN	CA-CB-CG	8.50	121.10	112.60	3	5
C	349	GLY	C-N-CA	8.48	136.97	121.70	4	6
B	116	GLN	OE1-CD-NE2	8.47	131.07	122.60	4	3
C	17	LEU	C-N-CA	8.46	136.94	121.70	8	2
C	32	HIS	CA-CB-CG	8.39	122.19	113.80	3	2
B	32	HIS	CD2-NE2-CE1	8.31	100.69	109.00	4	7
C	373	ASN	CA-CB-CG	8.28	120.88	112.60	5	2
C	262	ASP	CA-CB-CG	8.28	104.32	112.60	8	2
B	100	ARG	NE-CZ-NH2	8.25	111.77	119.20	9	3
A	304	ILE	CA-CB-CG1	8.21	124.35	110.40	9	4
B	27	HIS	CD2-NE2-CE1	8.21	100.79	109.00	6	8
A	296	PHE	CA-CB-CG	8.19	105.61	113.80	5	3
B	249	TYR	CB-CG-CD1	8.18	108.52	120.80	6	1
B	72	ARG	NE-CZ-NH2	8.17	111.85	119.20	4	2
A	127	HIS	CB-CG-CD2	8.14	120.62	131.20	8	2
B	58	PHE	CA-CB-CG	8.13	121.93	113.80	4	2
C	385	ASP	CA-CB-CG	8.12	120.72	112.60	5	3
A	102	PHE	C-N-CA	8.11	136.30	121.70	2	2
A	259	HIS	CD2-NE2-CE1	8.09	100.91	109.00	6	7
B	172	ARG	NE-CZ-NH2	8.07	126.46	119.20	5	2
C	243	PHE	CA-CB-CG	8.05	121.85	113.80	7	2
A	168	ASN	CA-CB-CG	8.04	120.64	112.60	3	3
A	106	ALA	N-CA-CB	8.04	122.46	110.40	9	5
C	103	ASN	CA-C-N	8.02	128.93	116.90	9	3
C	386	ALA	C-CA-CB	8.02	98.47	110.50	6	4
A	37	TYR	CB-CG-CD2	8.00	108.80	120.80	9	1
C	215	GLN	OE1-CD-NE2	7.99	130.59	122.60	1	1
C	143	ASN	OD1-CG-ND2	7.97	130.57	122.60	6	2
C	396	ASN	OD1-CG-ND2	7.96	130.56	122.60	5	2
C	41	PHE	CA-CB-CG	7.96	105.84	113.80	6	2

Chain	Res	Type	Atoms	|Z|	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
C	32	HIS	ND1-CE1-NE2	7.94	116.34	108.40	9	8
B	5	TYR	N-CA-CB	7.93	123.98	110.50	10	3
B	120	HIS	ND1-CE1-NE2	7.90	116.30	108.40	6	3
B	32	HIS	ND1-CE1-NE2	7.87	116.27	108.40	2	3
B	120	HIS	CD2-NE2-CE1	7.86	101.14	109.00	6	4
A	318	PHE	CA-CB-CG	7.86	121.66	113.80	9	3
C	307	ASP	C-N-CA	7.84	135.81	121.70	3	3
C	396	ASN	CA-CB-CG	7.83	104.77	112.60	2	2
C	20	ILE	CA-CB-CG1	7.80	123.67	110.40	6	1
C	302	ALA	C-CA-CB	7.80	98.80	110.50	2	3
A	218	HIS	CA-CB-CG	7.80	106.00	113.80	10	3
A	120	HIS	CG-CD2-NE2	7.79	114.99	107.20	7	3
B	47	ARG	NE-CZ-NH2	7.76	112.22	119.20	2	4

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	1.38	26
2	1.91	36
3	1.70	32
4	1.17	22
5	1.38	26
6	1.17	22
7	1.86	35
8	1.12	21
9	0.85	16
10	1.38	26

There are 262 clashes. The table below contains the detailed list of all clashes based on a MolProbity analysis. Bad clashes are >= 0.4 Angstrom. The output is limited to 100 rows.

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
C:71:ALA:H	C:165:ASN:HD22	0.82	7	3
B:71:ALA:HB3	B:165:ASN:HD22	0.76	7	1
C:117:PHE:H	C:373:ASN:HD22	0.70	10	1
C:202:ILE:H	C:202:ILE:HD12	0.63	5	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
B:63:VAL:HG22	B:183:ASN:HD22	0.62	9	1
B:264:MET:HA	B:264:MET:HE2	0.61	8	2
C:328:LEU:HD13	C:333:GLN:HE21	0.61	2	1
B:308:GLY:H	B:396:ASN:HD22	0.61	2	1
A:289:ILE:HG21	A:404:THR:HG23	0.60	1	1
B:271:ARG:HB2	B:350:VAL:HG22	0.60	2	1
C:256:PHE:HA	C:259:HIS:CD2	0.60	1	1
B:280:THR:HG22	B:298:LEU:HD13	0.59	1	2
B:309:THR:HG21	B:357:MET:HG2	0.59	7	1
B:167:GLU:HB2	B:171:VAL:HG21	0.59	1	1
C:226:VAL:HG21	C:319:PHE:CD2	0.58	3	3
A:72:ARG:HE	A:161:THR:HG21	0.58	6	1
A:106:ALA:H	A:109:HIS:CE1	0.58	10	1
A:188:ALA:HA	B:163:LEU:HD22	0.57	8	1
A:125:LEU:H	A:125:LEU:HD22	0.57	8	1
C:8:LEU:H	C:8:LEU:HD22	0.57	7	2
B:287:MET:HE2	B:401:LEU:HD13	0.56	4	2
B:132:ILE:HD13	B:147:LEU:HD13	0.56	4	1
C:111:ALA:H	C:112:VAL:HG13	0.56	5	1
B:99:ALA:HB2	B:315:VAL:HA	0.56	7	1
A:260:ALA:HA	A:263:ALA:HB3	0.56	7	1
A:263:ALA:HB2	A:283:VAL:HG21	0.56	1	1
A:163:LEU:HD21	C:188:ALA:HA	0.56	1	2
C:313:GLN:HE22	C:358:LEU:HA	0.55	3	1
B:70:PRO:HA	B:71:ALA:C	0.55	7	1
C:67:SER:HA	C:72:ARG:HH11	0.54	7	2
A:313:GLN:HE22	A:358:LEU:HA	0.54	4	1
C:52:LEU:O	C:56:ILE:HG22	0.54	1	1
B:291:GLU:HA	B:294:TYR:CE2	0.54	4	2
B:260:ALA:HA	B:263:ALA:HB3	0.54	10	6
B:72:ARG:HH12	B:76:VAL:HG22	0.54	2	1
A:109:HIS:HB3	A:323:ALA:HA	0.54	7	1
B:271:ARG:NE	B:272:SER:H	0.53	2	1
C:56:ILE:HD11	C:190:TYR:CD1	0.53	10	1
A:188:ALA:HA	B:163:LEU:HD11	0.53	2	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
C:111:ALA:HA	C:116:GLN:HE22	0.53	5	1
A:54:MET:HB2	A:55:PRO:HD3	0.52	6	2
A:362:LEU:HD22	A:367:LEU:HD23	0.52	6	1
C:54:MET:HA	C:54:MET:HE2	0.52	1	1
B:349:GLY:H	B:392:ARG:HH12	0.52	8	2
B:53:VAL:HG22	B:356:ILE:HG23	0.52	6	1
B:57:VAL:HG21	B:360:MET:SD	0.52	1	1
C:167:GLU:HB2	C:171:VAL:HG21	0.52	5	1
B:274:SER:H	B:302:ALA:HB1	0.52	2	1
B:62:VAL:HG11	B:182:ILE:HD13	0.52	3	1
B:279:VAL:HG13	B:282:ARG:HH21	0.52	8	1
C:110:LEU:HD11	C:380:MET:HE3	0.52	8	1
A:272:SER:HB2	A:275:GLY:H	0.52	7	1
A:287:MET:HE1	A:401:LEU:HD13	0.52	10	1
B:22:GLY:HA2	B:209:ALA:HA	0.51	7	1
A:163:LEU:HD23	A:171:VAL:HG13	0.51	2	1
A:204:VAL:HA	A:207:LEU:HD12	0.51	2	1
B:197:MET:HE3	B:352:GLY:CA	0.51	3	1
B:393:THR:HA	B:396:ASN:HD22	0.51	3	2
B:75:ARG:HA	B:75:ARG:HE	0.51	7	1
A:56:ILE:HD12	A:356:ILE:HD12	0.51	2	1
C:234:LEU:HD11	C:395:VAL:HG21	0.50	10	1
B:12:LEU:HD23	B:386:ALA:HB1	0.50	8	1
B:154:ILE:HD11	B:345:ILE:HD12	0.50	10	1
C:234:LEU:CD1	C:395:VAL:HG21	0.50	10	1
C:272:SER:HB2	C:275:GLY:H	0.50	2	1
A:279:VAL:HG13	A:282:ARG:HH22	0.50	6	1
C:320:ILE:HD11	C:381:ILE:HG21	0.49	3	1
B:187:GLU:OE1	C:171:VAL:HA	0.49	2	1
B:164:MET:HE3	B:176:GLU:HG2	0.49	4	1
B:243:PHE:CE2	B:253:PRO:HG2	0.49	6	1
A:402:THR:HG22	A:406:ILE:HD12	0.49	5	1
A:73:LEU:HD13	A:296:PHE:CE2	0.49	4	1
A:263:ALA:CB	A:283:VAL:HG21	0.49	1	1
B:291:GLU:HA	B:294:TYR:CD2	0.49	3	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
B:30:TYR:HB3	B:32:HIS:CD2	0.49	5	1
A:256:PHE:CD1	A:287:MET:HE2	0.49	7	1
B:21:VAL:HG12	B:205:PHE:CE1	0.49	10	1
C:311:LEU:O	C:311:LEU:HD13	0.49	2	1
A:191:LYS:HZ3	B:162:TYR:HE2	0.49	8	1
C:69:SER:CB	C:158:ILE:HA	0.48	9	3
B:185:LEU:HG	B:189:MET:HE2	0.48	3	1
C:164:MET:HA	C:172:ARG:HA	0.48	8	1
C:91:ALA:O	C:311:LEU:HD22	0.48	5	1
A:62:VAL:HG11	A:182:ILE:HG21	0.48	5	1
B:34:VAL:HG11	B:210:TYR:HA	0.48	9	1
A:57:VAL:O	A:61:LEU:HD13	0.48	10	1
B:62:VAL:HG22	B:153:ALA:O	0.47	4	1
B:54:MET:HE1	B:146:VAL:HA	0.47	2	2
C:247:LYS:HA	C:247:LYS:HE3	0.47	4	1
C:54:MET:HE3	C:144:GLY:HA2	0.47	6	1
A:242:TYR:CD1	A:402:THR:HG21	0.47	8	1
C:147:LEU:HB2	C:148:PRO:HD3	0.47	8	1
B:61:LEU:HD12	B:304:ILE:HG21	0.47	8	2
A:51:MET:HE3	B:134:PRO:HG2	0.47	5	1
B:32:HIS:CG	B:33:ALA:N	0.47	1	1
A:106:ALA:H	A:222:GLU:HG2	0.47	6	1
A:187:GLU:HA	A:190:TYR:CE2	0.47	7	1
A:129:LEU:O	A:132:ILE:HG22	0.47	9	2
A:327:HIS:CE1	A:333:GLN:HG3	0.46	2	1
A:264:MET:SD	A:394:MET:HA	0.46	3	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	1229	1141	69	19
2	1229	1131	78	20
3	1229	1134	74	21
4	1229	1136	69	24
5	1229	1138	72	19

Model ID	Analysed	Favored	Allowed	Outliers
6	1229	1138	70	21
7	1229	1140	67	22
8	1229	1137	75	17
9	1229	1133	80	16
10	1229	1139	69	21

There are 55 unique backbone outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
B	271	ARG	10
C	122	ALA	10
C	348	ALA	10
A	111	ALA	9
A	345	ILE	9
B	272	SER	9
A	72	ARG	8
A	168	ASN	7
B	136	ASN	7
B	305	ASN	7
C	272	SER	7
A	272	SER	6
C	136	ASN	6
A	73	LEU	5
A	167	GLU	5
A	413	THR	5
B	72	ARG	5
C	271	ARG	5
C	290	SER	5
C	326	SER	5
A	6	PRO	4
B	70	PRO	4
B	111	ALA	4
A	251	ILE	3
A	414	LEU	3
B	167	GLU	3
C	70	PRO	3

Chain	Res	Type	Models (Total)
A	106	ALA	2
A	136	ASN	2
A	368	PRO	2
B	168	ASN	2
B	367	LEU	2
C	104	PRO	2
C	111	ALA	2
C	251	ILE	2
A	103	ASN	1
A	250	GLY	1
A	271	ARG	1
A	325	GLY	1
A	329	THR	1
A	350	VAL	1
A	412	GLY	1
B	5	TYR	1
B	73	LEU	1
B	104	PRO	1
B	106	ALA	1
B	112	VAL	1
B	113	GLY	1
B	115	GLN	1
C	73	LEU	1
C	106	ALA	1
C	108	ILE	1
C	167	GLU	1
C	168	ASN	1
C	250	GLY	1

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	963	853	80	30
2	963	855	67	41
3	963	859	64	40

Model ID	Analysed	Favored	Allowed	Outliers
4	963	861	68	34
5	963	831	84	48
6	963	834	88	41
7	963	838	77	48
8	963	861	65	37
9	963	863	68	32
10	963	860	69	34

There are 228 unique sidechain outliers. Detailed list of outliers are tabulated below. The output is limited to 100 rows.

Chain	Res	Type	Models (Total)
B	271	ARG	10
C	294	TYR	9
A	205	PHE	8
C	311	LEU	7
C	347	THR	7
A	251	ILE	6
A	304	ILE	6
B	15	LEU	6
C	271	ARG	6
C	251	ILE	5
A	57	VAL	4
A	256	PHE	4
B	51	MET	4
B	205	PHE	4
B	350	VAL	4
C	70	PRO	4
C	266	THR	4
A	132	ILE	3
A	147	LEU	3
A	269	VAL	3
A	294	TYR	3
A	299	PRO	3
A	351	PRO	3
A	396	ASN	3
B	36	THR	3

Chain	Res	Type	Models (Total)
B	208	ILE	3
B	287	MET	3
B	294	TYR	3
C	124	PRO	3
C	245	LEU	3
C	329	THR	3
C	350	VAL	3
A	40	PRO	2
A	53	VAL	2
A	68	ILE	2
A	80	ILE	2
A	119	PRO	2
A	161	THR	2
A	168	ASN	2
A	215	GLN	2
A	227	THR	2
A	247	LYS	2
A	264	MET	2
A	285	LYS	2
A	414	LEU	2
B	11	ILE	2
B	52	LEU	2
B	80	ILE	2
B	161	THR	2
B	187	GLU	2
B	234	LEU	2
B	251	ILE	2
B	261	LYS	2
B	280	THR	2
B	329	THR	2
B	369	LEU	2
C	7	VAL	2
C	40	PRO	2
C	44	LEU	2
C	53	VAL	2

Chain	Res	Type	Models (Total)
C	68	ILE	2
C	79	LYS	2
C	93	THR	2
C	98	MET	2
C	115	GLN	2
C	135	THR	2
C	137	PRO	2
C	147	LEU	2
C	155	ILE	2
C	168	ASN	2
C	182	ILE	2
C	205	PHE	2
C	235	THR	2
C	278	PRO	2
C	309	THR	2
C	330	VAL	2
C	345	ILE	2
C	351	PRO	2
A	6	PRO	1
A	9	GLN	1
A	10	LYS	1
A	17	LEU	1
A	23	LEU	1
A	34	VAL	1
A	36	THR	1
A	47	ARG	1
A	70	PRO	1
A	75	ARG	1
A	78	VAL	1
A	79	LYS	1
A	87	THR	1
A	92	VAL	1
A	94	LEU	1
A	98	MET	1
A	102	PHE	1

Chain	Res	Type	Models (Total)
A	109	HIS	1
A	110	LEU	1
A	118	GLN	1
A	125	LEU	1
A	136	ASN	1

5. Fit to Data Used for Modeling Assessment

6. Fit to Data Used for Validation Assessment

Validation for this section is under development.

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