Integrative Structure Validation Report

July 22, 2024 - 05:17 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	9A3B
PDB-Dev ID	PDBDEV_00000196
Structure Title	Model of E. coli PtsG by in-cell photo-crosslinking MS and deep learning
Structure Authors	Stahl, K.; Graziadei, A.; Dau, T.; 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

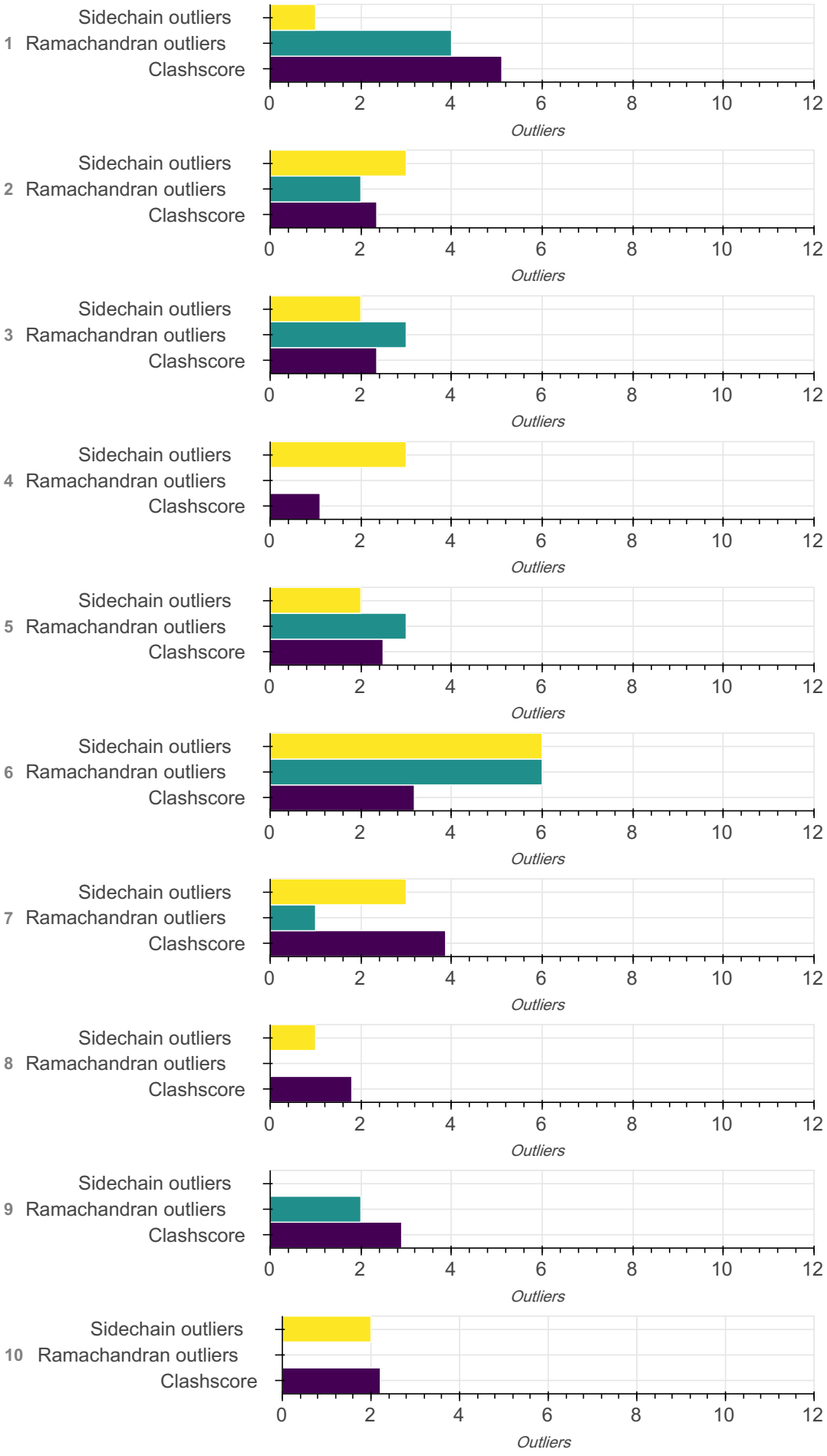
A user guide is available at https://pdb-dev.wwpdb.org/validation_help.html with specific help available everywhere you see the ? symbol.

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


1
2
3
4
5
6
7
8
9
10
Sidechain outliers
Ramachandran outliers
Clashscore
0
2
4
6
8
10
12
Outliers

Ensemble information

This entry consists of 0 distinct ensemble(s).

Summary

This entry consists of 10 unique models, with 1 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 1 flexible or non-rigid units.

Entry composition

There are 10 unique types of models in this entry.These models are titled None, None, None, None, None, None, None, None, None, None respectively.

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
1	1	1	P69786	A	A	477
2	1	1	P69786	A	A	477
3	1	1	P69786	A	A	477
4	1	1	P69786	A	A	477
5	1	1	P69786	A	A	477
6	1	1	P69786	A	A	477
7	1	1	P69786	A	A	477
8	1	1	P69786	A	A	477
9	1	1	P69786	A	A	477
10	1	1	P69786	A	A	477

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	jPOSTrepo	JPST001851

Representation

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

Chain ID	Rigid bodies	Non-rigid segments
A	-	1-477

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	AlphaLink with 10 msa subsamples	AlphaLink	None	10	False	False

There is 1 software package reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	AlphaLink	1.0	model building	https://github.com/lhatsk/AlphaLink

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 36630 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
CD1--HD11	1.09	0.97	880
CB--HB	1.09	0.97	1040
CG1--HG12	1.09	0.97	840
CB--HB3	1.09	0.97	3230
NZ--HZ1	1.01	0.89	210
CD--HD3	1.09	0.97	560
CA--HA	1.09	0.97	4270
CD1--HD12	1.09	0.97	880
CG--HG	1.09	0.97	440
CB--HB2	1.09	0.97	3230
CE--HE2	1.09	0.97	360
CG--HG3	1.09	0.97	950
OG1--HG1	0.96	0.84	200
CG1--HG13	1.09	0.97	840
CE--HE3	1.09	0.97	360
CB--HB1	1.09	0.97	610
CG--HG2	1.09	0.97	950
CD1--HD13	1.09	0.97	880
CG2--HG21	1.09	0.97	1040
CD2--HD21	1.09	0.97	440
CG2--HG23	1.09	0.97	1040
CG2--HG22	1.09	0.97	1040

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
CE--HE1	1.09	0.97	150
NZ--HZ2	1.01	0.89	210
CA--HA2	1.09	0.97	500
NZ--HZ3	1.01	0.89	210
CD2--HD23	1.09	0.97	440
CA--HA3	1.09	0.97	500
CD--HD2	1.09	0.97	560
CG1--HG11	1.09	0.97	400
CD2--HD22	1.09	0.97	440
OG--HG	0.96	0.84	280
OH--HH	0.96	0.84	140
N--H1	1.01	0.89	10
N--H3	1.01	0.89	10
N--H2	1.01	0.89	10
SG--HG	1.33	1.20	6
SG--HG	1.34	1.20	24
N--H	1.01	0.86	4530
NH2--HH21	1.01	0.86	120
NE2--HE21	1.01	0.86	90
CE2--HE2	1.08	0.93	460
CZ--HZ	1.08	0.93	320
CD2--HD2	1.08	0.93	560
NH1--HH11	1.01	0.86	120

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
ND2--HD22	1.01	0.86	160
ND2--HD21	1.01	0.86	160
NE--HE	1.01	0.86	120
CE1--HE1	1.08	0.93	560
NH2--HH22	1.01	0.86	120
CD1--HD1	1.08	0.93	520
CE3--HE3	1.08	0.93	60
CZ3--HZ3	1.08	0.93	60
CH2--HH2	1.08	0.93	60
NH1--HH12	1.01	0.86	120
NE1--HE1	1.01	0.86	60
CZ2--HZ2	1.08	0.93	60
NE2--HE22	1.01	0.86	90
ND1--HD1	1.01	0.86	88
NE2--HE2	1.01	0.86	12

Standard geometry: angle outliers

There are 101 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
C-CA-CB	110.50	122.19	1
CA-CB-CG	112.60	120.27	1
CA-CB-CG	113.80	121.31	1
C-N-CA	121.70	134.42	1
CA-CB-CG	112.60	119.41	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
NE-CZ-NH2	119.20	125.03	1
CA-CB-CG	113.80	120.17	1
NE-CZ-NH2	119.20	124.91	1
OE1-CD-NE2	122.60	116.29	1
NE-CZ-NH2	119.20	124.75	1
OE1-CD-NE2	122.60	116.62	1
CB-CG-CD2	131.20	123.49	1
NE-CZ-NH2	119.20	124.46	1
NE-CZ-NH2	119.20	124.43	1
NE-CZ-NH2	119.20	124.40	1
OE1-CD-NE2	122.60	116.86	1
C-CA-CB	110.10	120.96	1
OE1-CD-NE2	122.60	117.13	1
C-N-CA	121.70	131.36	1
CB-CG-CD2	131.20	124.56	1
OE1-CD-NE2	122.60	117.49	1
C-N-CA	121.70	130.68	1
CB-CG-CD2	131.20	124.72	1
CB-CG-CD2	131.20	124.76	1
OE1-CD-NE2	122.60	117.65	1
CB-CG-CD2	131.20	124.77	1
C-N-CA	121.70	130.54	1
CB-CG-CD2	131.20	124.82	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
OE1-CD-NE2	122.60	117.71	1
CB-CG-CD2	131.20	124.88	1
CB-CG-CD2	131.20	124.92	1
CB-CG-CD2	131.20	124.93	1
OE1-CD-NE2	122.60	117.81	1
N-CA-CB	110.50	102.37	1
NE-CZ-NH2	119.20	123.49	1
CB-CG-CD2	131.20	125.04	1
CB-CG-CD2	131.20	125.09	1
CA-CB-CG2	110.50	118.47	1
CA-N-CD	112.00	105.45	1
CB-CG-CD2	131.20	125.12	1
OE1-CD-NE2	122.60	117.94	1
CB-CG-CD2	131.20	125.15	1
OE1-CD-NE2	122.60	117.95	1
CB-CG-CD2	131.20	125.23	1
CB-CG-CD2	131.20	125.26	1
OD1-CG-ND2	122.60	118.05	1
CB-CG-CD2	131.20	125.30	1
CB-CG-CD2	131.20	125.34	1
CA-C-N	116.90	123.60	1
OE1-CD-NE2	122.60	118.14	1
OE1-CD-NE2	122.60	118.16	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
OE1-CD-NE2	122.60	118.17	1
C-N-CA	121.70	129.66	1
CB-CG-CD2	131.20	125.47	1
CB-CG-CD2	131.20	125.54	1
OD1-CG-ND2	122.60	118.27	1
CB-CG-CD2	131.20	125.60	1
CB-CG-CD2	131.20	125.62	1
OE1-CD-NE2	122.60	118.33	1
C-CA-CB	110.10	118.20	1
OE1-CD-NE2	122.60	118.34	1
CB-CG-CD2	131.20	125.70	1
OE1-CD-NE2	122.60	118.37	1
C-N-CA	121.70	129.31	1
CB-CG-CD2	131.20	125.71	2
C-CA-CB	110.10	118.10	1
CB-CG-CD2	131.20	125.73	1
C-CA-CB	109.10	118.34	1
C-N-CA	121.70	129.25	1
OE1-CD-NE2	122.60	118.41	1
OE1-CD-NE2	122.60	118.42	1
OE1-CD-NE2	122.60	118.43	1
CB-CG-CD2	131.20	125.78	1
OE1-CD-NE2	122.60	118.45	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CB-CG-CD2	131.20	125.81	2
OE1-CD-NE2	122.60	118.47	1
CA-CB-CG	113.80	117.92	1
N-CA-C	111.00	122.53	1
C-N-CA	121.70	129.08	1
CB-CG-CD2	131.20	125.88	1
CA-CB-CG	112.60	108.51	1
OE1-CD-NE2	122.60	118.52	1
OD1-CG-ND2	122.60	118.53	1
OE1-CD-NE2	122.60	118.53	1
OE1-CD-NE2	122.60	118.54	1
CB-CG-CD2	131.20	125.93	1
C-CA-CB	110.10	117.79	1
CB-CG-CD2	131.20	125.94	2
NH1-CZ-NH2	119.30	114.05	1
OE1-CD-NE2	122.60	118.57	1
OE1-CD-NE2	122.60	118.58	1
CB-CG-CD2	131.20	125.99	2
HZ2-NZ-HZ3	96.67	109.00	1
HZ1-NZ-HZ3	96.66	109.00	1
HZ2-NZ-HZ3	96.63	109.00	1
C-N-H	109.56	124.30	1
C-N-H	108.75	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	5.11	37
2	2.35	17
3	2.35	17
4	1.10	8
5	2.49	18
6	3.18	23
7	3.87	28
8	1.80	13
9	2.90	21
10	2.21	16

All 198 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:93:MET:HE1	A:116:THR:HG21	0.666
1	A:116:THR:HG22	A:172:TRP:NE1	0.634
1	A:98:PRO:HD3	A:108:ILE:HD13	0.627
1	A:284:MET:HE1	A:304:PHE:CE2	0.613
1	A:284:MET:HE1	A:304:PHE:CZ	0.608
1	A:93:MET:HE2	A:112:HIS:HD2	0.597
1	A:93:MET:HE2	A:112:HIS:CD2	0.584
1	A:240:TYR:CE2	A:334:GLY:HA2	0.584
1	A:273:LYS:NZ	A:389:ALA:H	0.576

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:119:LEU:HD22	A:210:LEU:HD21	0.547
1	A:391:GLU:HB3	A:446:ALA:HB3	0.527
1	A:105:ALA:HA	A:108:ILE:HD12	0.525
1	A:234:HIS:CB	A:236:ASP:HB2	0.524
1	A:202:GLU:CD	A:203:ARG:HH21	0.512
1	A:14:LYS:HZ3	A:421:CYS:HA	0.504
1	A:305:MET:HE1	A:315:HIS:CB	0.496
1	A:305:MET:HE1	A:315:HIS:CG	0.476
1	A:364:TYR:CE1	A:368:TYR:CE2	0.476
1	A:391:GLU:OE2	A:458:ILE:HD12	0.476
1	A:273:LYS:HZ2	A:389:ALA:H	0.476
1	A:172:TRP:CZ3	A:213:ILE:HD13	0.472
1	A:240:TYR:CE2	A:334:GLY:CA	0.469
1	A:336:SER:HA	A:347:LEU:HD11	0.464
1	A:93:MET:HB3	A:112:HIS:CD2	0.459
1	A:116:THR:HG22	A:172:TRP:CD1	0.454
1	A:234:HIS:CG	A:236:ASP:HB2	0.451
1	A:279:LYS:HE3	A:461:THR:HG23	0.442
1	A:93:MET:CE	A:116:THR:HG21	0.440
1	A:284:MET:HE1	A:304:PHE:CE1	0.433
1	A:253:GLY:HA2	A:256:PHE:CE1	0.430
1	A:284:MET:HE1	A:304:PHE:CD2	0.430
1	A:254:PHE:CE1	A:339:HIS:HA	0.418

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:195:PHE:CE1	A:250:LEU:CD1	0.413
1	A:351:SER:HB2	A:354:LEU:HD21	0.411
1	A:179:ILE:HG22	A:217:PRO:HG2	0.409
1	A:422:ILE:O	A:461:THR:HA	0.404
1	A:240:TYR:CD1	A:335:THR:HG23	0.403
2	A:305:MET:HE3	A:306:PHE:CE1	0.645
2	A:401:MET:HE3	A:466:LEU:CD2	0.573
2	A:30:LEU:HD21	A:241:MET:HE2	0.547
2	A:207:PRO:HG3	A:305:MET:SD	0.520
2	A:93:MET:HE1	A:116:THR:HG23	0.493
2	A:202:GLU:CD	A:203:ARG:HH21	0.485
2	A:253:GLY:HA2	A:256:PHE:CE1	0.482
2	A:23:LEU:HD13	A:337:PHE:CE1	0.468
2	A:207:PRO:CG	A:305:MET:SD	0.444
2	A:305:MET:HE3	A:306:PHE:CZ	0.441
2	A:292:PHE:CE1	A:341:LEU:HD22	0.440
2	A:240:TYR:CE2	A:334:GLY:HA3	0.438
2	A:425:LEU:HD21	A:470:MET:SD	0.424
2	A:237:ILE:HB	A:238:PRO:HD3	0.409
2	A:218:PHE:CD1	A:222:ILE:HD12	0.407
2	A:271:SER:HA	A:373:ARG:HH12	0.407
2	A:280:VAL:HG21	A:385:GLY:HA3	0.406
3	A:284:MET:HE1	A:304:PHE:CE1	0.779

Model ID	Atom-1	Atom-2	Clash overlap (Å)
3	A:284:MET:HE1	A:304:PHE:CZ	0.651
3	A:93:MET:HE1	A:116:THR:HG23	0.535
3	A:271:SER:HA	A:373:ARG:HH12	0.520
3	A:119:LEU:HD22	A:213:ILE:HD11	0.512
3	A:241:MET:HE1	A:347:LEU:CD2	0.503
3	A:284:MET:HE2	A:284:MET:N	0.488
3	A:241:MET:HE1	A:347:LEU:HD22	0.481
3	A:284:MET:CE	A:304:PHE:CZ	0.472
3	A:271:SER:HA	A:373:ARG:NH1	0.442
3	A:401:MET:HE2	A:466:LEU:HD21	0.442
3	A:253:GLY:HA2	A:256:PHE:CE1	0.439
3	A:119:LEU:HD22	A:213:ILE:CD1	0.435
3	A:130:TYR:CD1	A:131:MET:HE2	0.432
3	A:398:THR:HB	A:469:GLU:OE2	0.429
3	A:202:GLU:CD	A:203:ARG:HH21	0.424
3	A:337:PHE:CD1	A:338:SER:HB2	0.423
4	A:93:MET:HE1	A:116:THR:HG21	0.671
4	A:89:MET:HE1	A:120:GLY:CA	0.585
4	A:276:ASN:HD21	A:392:ASP:CG	0.457
4	A:35:ALA:HB3	A:37:PHE:CE2	0.448
4	A:351:SER:HB2	A:354:LEU:HD21	0.443
4	A:305:MET:HE3	A:306:PHE:CZ	0.439
4	A:202:GLU:CD	A:203:ARG:HH21	0.435

Model ID	Atom-1	Atom-2	Clash overlap (Å)
4	A:101:LEU:HD21	A:173:PRO:CG	0.431
5	A:401:MET:HE3	A:466:LEU:HD21	1.106
5	A:119:LEU:HB2	A:213:ILE:HD11	0.833
5	A:401:MET:CE	A:466:LEU:HD21	0.651
5	A:119:LEU:CB	A:213:ILE:HD11	0.580
5	A:31:GLY:HA2	A:347:LEU:HD21	0.572
5	A:401:MET:HE3	A:466:LEU:CD2	0.563
5	A:202:GLU:CD	A:203:ARG:HH21	0.514
5	A:284:MET:HE1	A:304:PHE:CE1	0.505
5	A:31:GLY:CA	A:347:LEU:HD21	0.497
5	A:207:PRO:HB3	A:306:PHE:CZ	0.483
5	A:179:ILE:HG22	A:217:PRO:HG2	0.449
5	A:405:LEU:CD1	A:466:LEU:HD22	0.449
5	A:284:MET:CE	A:304:PHE:CE1	0.437
5	A:239:ARG:HB2	A:335:THR:HG23	0.427
5	A:425:LEU:HD21	A:470:MET:SD	0.425
5	A:405:LEU:HD11	A:466:LEU:HD22	0.417
5	A:98:PRO:HA	A:108:ILE:CD1	0.412
5	A:284:MET:HE1	A:304:PHE:CD1	0.409
6	A:268:ILE:HD11	A:304:PHE:CE1	0.797
6	A:195:PHE:CE1	A:222:ILE:HG22	0.698
6	A:401:MET:HE3	A:466:LEU:CD2	0.567
6	A:250:LEU:HD12	A:339:HIS:CE1	0.564

Model ID	Atom-1	Atom-2	Clash overlap (Å)
6	A:195:PHE:CZ	A:222:ILE:HG22	0.556
6	A:13:GLY:HA3	A:306:PHE:CZ	0.537
6	A:98:PRO:HA	A:108:ILE:CD1	0.523
6	A:93:MET:HE1	A:116:THR:HG21	0.483
6	A:351:SER:HB2	A:354:LEU:HD21	0.473
6	A:202:GLU:CD	A:203:ARG:HH21	0.470
6	A:257:LYS:HG2	A:297:THR:HG21	0.470
6	A:56:PHE:CZ	A:337:PHE:CZ	0.453
6	A:268:ILE:HD11	A:304:PHE:HE1	0.453
6	A:270:HIS:C	A:373:ARG:HH12	0.450
6	A:373:ARG:CZ	A:377:LYS:HE3	0.444
6	A:150:LYS:HE3	A:465:ASN:OD1	0.441
6	A:186:ALA:HB1	A:194:ALA:HB1	0.438
6	A:179:ILE:HD13	A:213:ILE:HG22	0.432
6	A:195:PHE:CD1	A:222:ILE:HG22	0.430
6	A:207:PRO:HB2	A:305:MET:SD	0.424
6	A:300:ILE:HG22	A:304:PHE:CE2	0.422
6	A:207:PRO:CB	A:305:MET:SD	0.412
6	A:280:VAL:HG21	A:385:GLY:HA3	0.401
7	A:348:SER:HB3	A:354:LEU:HD21	0.913
7	A:218:PHE:CE1	A:222:ILE:HD11	0.859
7	A:241:MET:HE1	A:347:LEU:HD22	0.693
7	A:279:LYS:HE2	A:446:ALA:HB2	0.567

Model ID	Atom-1	Atom-2	Clash overlap (Å)
7	A:119:LEU:HD22	A:213:ILE:HG12	0.555
7	A:31:GLY:HA3	A:346:VAL:HG12	0.540
7	A:271:SER:HA	A:373:ARG:HH12	0.538
7	A:101:LEU:HD21	A:173:PRO:CB	0.532
7	A:218:PHE:CZ	A:222:ILE:HD11	0.508
7	A:271:SER:HA	A:373:ARG:NH1	0.500
7	A:344:PHE:CZ	A:354:LEU:HD22	0.497
7	A:11:LYS:HE2	A:71:PHE:HA	0.490
7	A:348:SER:CB	A:354:LEU:HD21	0.477
7	A:202:GLU:CD	A:203:ARG:HH21	0.464
7	A:292:PHE:CE1	A:341:LEU:HD22	0.455
7	A:101:LEU:HD21	A:173:PRO:HB2	0.446
7	A:279:LYS:HZ3	A:446:ALA:HA	0.446
7	A:10:GLN:HE22	A:456:GLN:CD	0.441
7	A:305:MET:HE3	A:306:PHE:CZ	0.439
7	A:373:ARG:CZ	A:377:LYS:HE3	0.437
7	A:351:SER:HB3	A:354:LEU:HG	0.435
7	A:409:PHE:CE2	A:427:VAL:HG21	0.435
7	A:218:PHE:CD1	A:222:ILE:HD11	0.433
7	A:207:PRO:HG3	A:305:MET:SD	0.427
7	A:19:PRO:O	A:22:VAL:HG22	0.424
7	A:10:GLN:HE22	A:456:GLN:NE2	0.414
7	A:279:LYS:HZ1	A:444:GLY:C	0.405

Model ID	Atom-1	Atom-2	Clash overlap (Å)
7	A:342:ILE:O	A:346:VAL:HG23	0.401
8	A:393:ALA:CB	A:442:LYS:HA	0.570
8	A:241:MET:HE1	A:347:LEU:CD2	0.542
8	A:218:PHE:HA	A:222:ILE:HD12	0.521
8	A:77:VAL:HG22	A:151:ARG:NH1	0.499
8	A:241:MET:HE1	A:347:LEU:HD21	0.482
8	A:401:MET:CE	A:466:LEU:CD2	0.465
8	A:240:TYR:CD1	A:334:GLY:HA3	0.456
8	A:191:PRO:CB	A:249:LYS:HE2	0.452
8	A:202:GLU:CD	A:203:ARG:HH21	0.438
8	A:254:PHE:CE1	A:339:HIS:HA	0.436
8	A:401:MET:CE	A:466:LEU:HD22	0.433
8	A:237:ILE:HB	A:238:PRO:HD3	0.424
8	A:305:MET:HE3	A:306:PHE:CZ	0.404
9	A:401:MET:HE3	A:466:LEU:HD21	1.073
9	A:279:LYS:HE2	A:446:ALA:HB2	0.815
9	A:195:PHE:CE1	A:222:ILE:HD12	0.752
9	A:279:LYS:CE	A:446:ALA:HB2	0.692
9	A:270:HIS:C	A:373:ARG:HH12	0.631
9	A:225:TYR:CE1	A:233:PHE:HB2	0.627
9	A:12:VAL:HG22	A:71:PHE:HZ	0.625
9	A:401:MET:CE	A:466:LEU:HD21	0.606
9	A:203:ARG:HH22	A:297:THR:CB	0.583

Model ID	Atom-1	Atom-2	Clash overlap (Å)
9	A:195:PHE:CZ	A:222:ILE:HD12	0.534
9	A:8:ASN:O	A:12:VAL:HG23	0.443
9	A:254:PHE:CE1	A:339:HIS:HA	0.440
9	A:284:MET:HA	A:284:MET:HE2	0.439
9	A:421:CYS:HB3	A:426:ARG:HH21	0.427
9	A:253:GLY:HA2	A:256:PHE:CE1	0.424
9	A:279:LYS:NZ	A:446:ALA:HB2	0.422
9	A:23:LEU:HD13	A:337:PHE:CE2	0.418
9	A:292:PHE:CE1	A:341:LEU:HD22	0.414
9	A:335:THR:HG21	A:339:HIS:CE1	0.411
9	A:23:LEU:HD22	A:59:MET:HE2	0.405
9	A:225:TYR:CZ	A:233:PHE:HB2	0.402
10	A:401:MET:HE2	A:466:LEU:HD22	0.556
10	A:218:PHE:CE1	A:222:ILE:HD11	0.549
10	A:13:GLY:HA3	A:306:PHE:CE2	0.490
10	A:280:VAL:HG21	A:385:GLY:HA3	0.489
10	A:198:TYR:HA	A:214:TRP:CH2	0.488
10	A:401:MET:HE2	A:466:LEU:CD2	0.470
10	A:202:GLU:CD	A:203:ARG:HH21	0.450
10	A:305:MET:CE	A:306:PHE:CZ	0.441
10	A:305:MET:HE3	A:306:PHE:CZ	0.437
10	A:253:GLY:HA2	A:256:PHE:CE1	0.431
10	A:17:MET:HE2	A:302:PHE:CB	0.427

Model ID	Atom-1	Atom-2	Clash overlap (Å)
10	A:270:HIS:C	A:373:ARG:HH12	0.424
10	A:305:MET:HE2	A:306:PHE:CE2	0.424
10	A:130:TYR:CD1	A:131:MET:HE2	0.422
10	A:210:LEU:HD23	A:213:ILE:HD12	0.417
10	A:101:LEU:HD21	A:173:PRO:CB	0.409

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	475	460	11	4
2	475	468	5	2
3	475	466	6	3
4	475	470	5	0
5	475	465	7	3
6	475	455	14	6
7	475	463	11	1
8	475	462	13	0
9	475	465	8	2
10	475	469	6	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	366	358	7	1

Model ID	Analyzed	Favored	Allowed	Outliers
2	366	357	6	3
3	366	359	5	2
4	366	358	5	3
5	366	358	6	2
6	366	355	5	6
7	366	359	4	3
8	366	360	5	1
9	366	358	8	0
10	366	359	5	2

Detailed list of outliers are tabulated below.

Model ID	Chain	Residue ID	Residue type
1	A	336	SER
2	A	9	LEU
2	A	343	ASP
2	A	390	THR
3	A	40	LEU
3	A	364	TYR
4	A	1	MET
4	A	251	SER
4	A	425	LEU
5	A	225	TYR
5	A	390	THR
6	A	1	MET

Model ID	Chain	Residue ID	Residue type
6	A	9	LEU
6	A	227	ASN
6	A	307	VAL
6	A	390	THR
6	A	398	THR
7	A	9	LEU
7	A	390	THR
7	A	425	LEU
8	A	17	MET
10	A	364	TYR
10	A	392	ASP

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

Validation for this section is under development.

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