Integrative Structure Validation Report

July 22, 2024 - 03:41 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	8ZZD
PDB-Dev ID	PDBDEV_00000013
Structure Title	Integrative structure of P450-Ferredoxin Complex
Structure Authors	Bowen AM; Johnson EOD; Mercuri F; Hoskins NJ; Qiao R; McCullagh JSO; Lovett JE; Bell SG; Zhou W; Timmel CR; Wong LL; Harmer JH

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

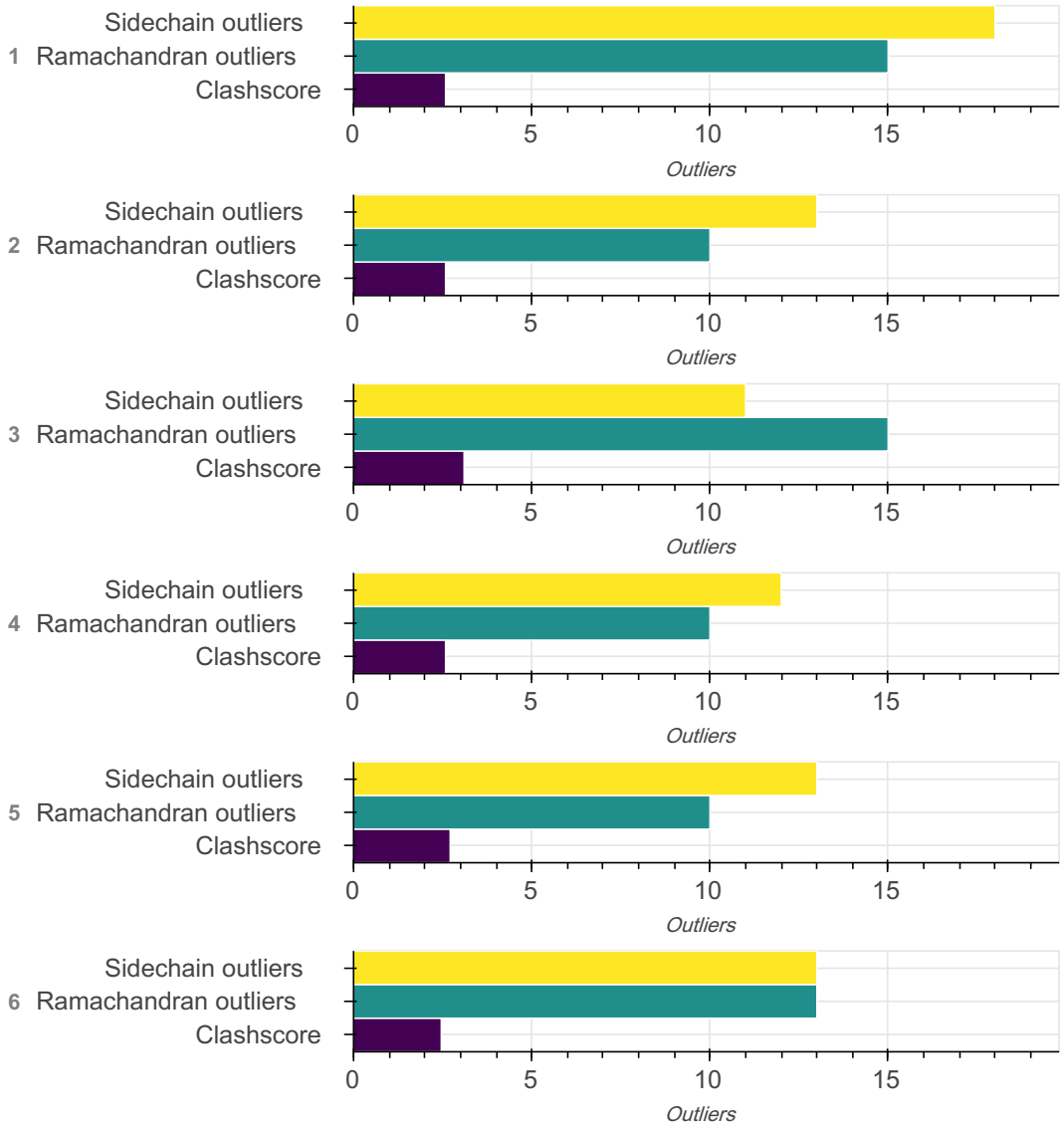
A user guide is available at https://pdb-dev.wwpdb.org/validation_help.html with specific help available everywhere you see the ? symbol.

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 1 distinct ensemble(s).

Summary

This entry consists of 6 unique models, with 2 subunits in each model. A total of 8 datasets or restraints were used to build this entry. Each model is represented by 2 rigid bodies and 0 flexible or non-rigid units.

Entry composition

There are 6 unique types of models in this entry.These models are titled Best scoring model, 2nd Best scoring model, 3rd Best scoring model, 4th Best scoring model, 5th Best scoring model, 6th Best scoring model respectively.

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
1	1	1	CYP199A2	A	A1	399
1	2	2	HaPux	B	C1	106
2	1	1	CYP199A2	A	A1	399
2	2	2	HaPux	B	C1	106
3	1	1	CYP199A2	A	A1	399
3	2	2	HaPux	B	C1	106
4	1	1	CYP199A2	A	A1	399
4	2	2	HaPux	B	C1	106
5	1	1	CYP199A2	A	A1	399
5	2	2	HaPux	B	C1	106
6	1	1	CYP199A2	A	A1	399
6	2	2	HaPux	B	C1	106

Datasets used for modeling

There are 8 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Experimental model	PDB	4DNJ
2	Experimental model	PDB	4LTU
3	Other	File	10.5287/bodleian:5zqPg5yVe
4	Other	File	10.5287/bodleian:5zqPg5yVe
5	Other	File	10.5287/bodleian:5zqPg5yVe
6	Other	File	10.5287/bodleian:5zqPg5yVe

ID	Dataset type	Database name	Data access code
7	Other	File	10.5287/bodleian:5zqPg5yVe
8	Other	File	10.5287/bodleian:5zqPg5yVe

Representation

This entry has only one representation and includes 2 rigid bodies and 0 flexible units

Chain ID	Rigid bodies	Non-rigid segments
A	1-399	-
B	1-106	-
C	-	-
D	-	-
E	-	-
F	-	-

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	None	Integrative Modeling	None	None	False	False

There are 5 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	PatchDock	Beta1.3	model building	https://bioinfo3d.cs.tau.ac.il/PatchDock/
2	FireDock	develop-5abded4c39	model building	http://bioinfo3d.cs.tau.ac.il/FireDock/

ID	Software name	Software version	Software classification	Software location
3	MMM	2017.1	model building	http://www.epr.ethz.ch/software.html
4	Matlab	R2017a	data processing	https://uk.mathworks.com/products/matlab.html
5	Gromacs	Not available	refinement	http://www.gromacs.org/

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 6162 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
NZ--HZ3	1.00	0.89	47
NZ--HZ1	1.00	0.89	61
NZ--HZ2	1.00	0.89	44
CHB--HHB	1.09	0.98	6
CHC--HHC	1.09	0.98	6
CHD--HHD	1.09	0.98	6
CHA--HHA	1.09	0.98	6
N--H2	1.00	0.89	3
N--H1	1.00	0.89	5
N--H3	1.00	0.89	3
NZ--HZ2	1.01	0.89	40

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
NZ--HZ3	1.01	0.89	37
N--H2	1.01	0.89	3
N--H3	1.01	0.89	3
NZ--HZ1	1.01	0.89	23
N--H1	1.01	0.89	1
NE2--HE22	0.99	0.86	4
SG--HG	1.33	1.20	6
NE2--HE21	0.99	0.86	9
ND2--HD22	0.99	0.86	9
NH2--HH21	0.99	0.86	2
N--H	0.99	0.86	2
N--H	1.00	0.86	1298
NE2--HE21	1.00	0.86	24
NE2--HE22	1.00	0.86	23
ND2--HD22	1.00	0.86	43
NH2--HH21	1.00	0.86	152
SG--HG	1.34	1.20	17
NH1--HH12	1.00	0.86	166
NH1--HH11	1.00	0.86	151
NH2--HH22	1.00	0.86	131
ND2--HD21	1.00	0.86	28
NE--HE	1.00	0.86	99
NE1--HE1	1.00	0.86	12

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
N--H	1.01	0.86	1486
NE--HE	1.01	0.86	117
NH1--HH12	1.01	0.86	50
NE2--HE21	1.01	0.86	24
NE2--HE2	1.01	0.86	34
NH2--HH22	1.01	0.86	85
NH1--HH11	1.01	0.86	65
NH2--HH21	1.01	0.86	62
ND2--HD21	1.01	0.86	58
ND2--HD22	1.01	0.86	39
NE2--HE22	1.01	0.86	43
SG--HG	1.35	1.20	1
NE1--HE1	1.01	0.86	5
CE1--HE1	1.08	0.93	1
C3--H3	1.08	0.93	2
ND2--HD22	1.02	0.86	5
CE2--HE2	1.09	0.93	198
NE2--HE2	1.02	0.86	20
C3--H3	1.09	0.93	4
N--H	1.02	0.86	16
ND2--HD21	1.02	0.86	10
NE2--HE22	1.02	0.86	2
CE1--HE1	1.09	0.93	257

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
NE1--HE1	1.02	0.86	7
NE2--HE21	1.02	0.86	15
CD2--HD2	1.09	0.93	258
CD1--HD1	1.09	0.93	220
C7--H7	1.09	0.93	6
CH2--HH2	1.09	0.93	24
CZ2--HZ2	1.09	0.93	24
CZ3--HZ3	1.09	0.93	24
CZ--HZ	1.09	0.93	126
CE3--HE3	1.09	0.93	24
C4--H4	1.09	0.93	6
C6--H6	1.09	0.93	6
ND1--HD1	1.02	0.86	6
OH--HH	1.00	0.84	13
OG--HG	1.00	0.84	4
CD1--HD1	1.10	0.93	2
OG--HG	1.01	0.84	18
OH--HH	1.01	0.84	12
OG1--HG1	1.01	0.84	17
OG1--HG1	1.02	0.84	55
OH--HH	1.02	0.84	15
OG--HG	1.02	0.84	30
OG1--HG1	1.03	0.84	46

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
OG--HG	1.03	0.84	46
OH--HH	1.03	0.84	24
OH--HH	1.04	0.84	7
OG1--HG1	1.04	0.84	14
OG--HG	1.04	0.84	57
OH--HH	1.05	0.84	1
OG--HG	1.05	0.84	1

Standard geometry: angle outliers

There are 157 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
CA-CB-CG	112.60	120.81	1
CA-CB-CG	112.60	120.66	1
CA-CB-CG	112.60	120.57	1
CA-CB-CG	112.60	120.54	1
CA-CB-CG	112.60	119.91	1
FE1-S2-FE2	75.66	68.34	1
FE1-S2-FE2	75.66	68.44	1
CB-CG-CD2	131.20	122.98	1
CB-CG-CD2	131.20	122.99	1
FE1-S2-FE2	75.66	68.52	1
S1-FE2-S2	104.33	111.38	1
S1-FE2-S2	104.33	111.37	1
S1-FE2-S2	104.33	111.34	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CA-CB-CG	112.60	118.73	1
FE1-S2-FE2	75.66	68.72	1
CB-CG-CD2	131.20	123.31	1
FE1-S2-FE2	75.66	68.75	1
FE1-S1-FE2	75.66	68.40	1
FE1-S1-FE2	75.66	68.42	1
S1-FE2-S2	104.33	111.18	1
CB-CG-CD2	131.20	123.43	2
FE1-S1-FE2	75.66	68.52	1
CB-CG-CD2	131.20	123.51	1
FE1-S2-FE2	75.66	68.94	1
CB-CG-CD2	131.20	123.55	1
FE1-S1-FE2	75.66	68.74	1
CA-CB-CG	112.60	118.34	1
CA-CB-CG	112.60	106.87	1
CB-CG-CD2	131.20	123.81	1
FE1-S1-FE2	75.66	68.85	1
CB-CG-CD2	131.20	123.89	1
CA-CB-CG	113.80	119.41	1
S1-FE2-S2	104.33	110.68	1
FE1-S1-FE2	75.66	69.04	1
CA-CB-CG	112.60	118.10	1
CA-CB-CG	112.60	107.11	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
C-N-CA	121.70	131.57	1
CB-CG-CD2	131.20	124.07	1
CB-CG-CD2	131.20	124.08	1
CB-CG-CD2	131.20	124.10	1
S1-FE2-S2	104.33	110.54	1
CA-CB-CG	112.60	118.03	1
CB-CG-CD2	131.20	124.18	1
S1-FE1-S2	104.33	110.78	1
S1-FE1-S2	104.33	110.77	1
CA-CB-CG	112.60	117.96	1
S1-FE1-S2	104.33	110.75	1
CB-CG-CD2	131.20	124.25	1
CA-CB-CG	113.80	119.11	2
C-N-CA	121.70	131.21	1
CA-CB-CG	113.80	119.06	1
S1-FE1-S2	104.33	110.63	1
CA-CB-CG	112.60	117.81	1
CA-CB-CG	112.60	117.80	1
CB-CG-CD2	131.20	124.46	1
CB-CG-CD2	131.20	124.47	1
CA-CB-CG	112.60	117.73	1
CA-CB-CG	113.80	118.87	2
C-N-CA	121.70	130.81	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
N-CA-CB	110.50	101.93	1
C-N-CA	121.70	130.77	1
CA-CB-CG	112.60	117.63	1
CA-CB-CG	113.80	118.81	1
CA-CB-CG	112.60	107.61	1
CA-CB-CG	112.60	117.58	1
CA-CB-CG	112.60	117.57	1
C-N-CA	121.70	130.51	1
S1-FE1-S2	104.33	110.13	1
CB-CG-CD2	131.20	124.96	1
CA-CB-CG	112.60	117.39	1
CB-CG-CD2	131.20	124.97	1
C-N-CA	121.70	130.30	1
N-CA-C	111.00	124.34	1
OD1-CG-ND2	122.60	117.85	1
CB-CG-CD2	131.20	125.04	1
CB-CG-CD2	131.20	125.06	1
CB-CG-CD2	131.20	125.08	1
C-N-CA	121.70	130.15	1
CA-CB-CG	113.80	118.48	2
S1-FE1-S2	104.33	109.95	1
C-N-CA	121.70	130.07	1
CA-CB-CG	112.60	117.23	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
OE1-CD-NE2	122.60	117.98	1
CA-CB-CG	112.60	117.19	1
CB-CG-CD2	131.20	125.24	1
N-CA-CB	110.50	102.76	1
N-CA-C	111.00	123.74	1
CB-CG-CD2	131.20	125.30	1
CA-CB-CG	112.60	117.13	2
CA-CB-CG	112.60	117.08	1
OE1-CD-NE2	122.60	118.12	1
CA-CB-CG	113.80	118.28	1
CB-CG-CD2	131.20	125.38	1
CA-CB-CG	112.60	117.07	1
CB-CG-CD2	131.20	125.39	1
OE1-CD-NE2	122.60	118.14	1
CB-CG-CD2	131.20	125.42	1
CA-CB-CG	112.60	117.03	1
CA-CB-CG	113.80	118.23	1
N-CA-CB	110.50	102.99	1
CB-CG-CD2	131.20	125.46	1
C-N-CA	121.70	129.60	1
CA-CB-CG	112.60	116.98	1
N-CA-CB	110.50	103.05	1
CB-CG-CD2	131.20	125.51	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CB-CG-CD2	131.20	125.52	1
N-CA-C	111.00	123.23	1
N-CA-C	111.00	123.22	1
CB-CG-CD2	131.20	125.54	1
CA-CB-CG	113.80	118.13	1
CA-CB-CG	112.60	116.93	1
CB-CG-CD2	131.20	125.58	1
CB-CG-CD2	131.20	125.60	1
N-CA-CB	110.50	103.18	1
CB-CG-CD2	131.20	125.64	1
CB-CG-CD	112.60	119.85	1
CA-CB-CG	112.60	116.86	1
C-N-CA	121.70	129.34	1
CA-CB-CG	112.60	116.83	1
CA-CB-CG	112.60	116.82	1
CA-CB-CG	112.60	116.80	1
N-CA-C	111.00	122.76	1
CB-CG-CD2	131.20	125.75	1
CB-CG-ND1	122.70	128.97	1
C-N-CA	121.70	129.22	1
CA-CB-CG	112.60	116.77	1
CA-CB-CG	113.80	117.96	1
CB-CG-ND1	122.70	128.93	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
C-N-CA	121.70	129.16	1
CA-CB-CG	113.80	117.94	1
CA-CB-CG	112.60	116.73	1
C-N-CA	121.70	129.10	1
CB-CG-ND1	122.70	128.86	1
C-N-CA	121.70	129.09	1
CA-CB-CG	112.60	108.50	1
N-CA-CB	110.50	103.54	1
CB-CG-CD2	131.20	125.89	1
CA-CB-CG	112.60	116.68	1
CB-CG-CD2	131.20	125.90	1
N-CA-CB	110.50	103.57	1
CB-CG-CD	112.60	119.52	1
CA-CB-CG2	110.50	117.41	1
CA-CB-CG	113.80	117.86	1
CB-CG-CD2	131.20	125.93	1
C-N-CA	121.70	128.99	1
CA-CB-CG	112.60	116.64	1
OD1-CG-ND2	122.60	118.56	1
CB-CG-CD	112.60	119.46	1
CA-CB-CG	113.80	117.83	1
CB-CG-CD2	131.20	125.97	1
CB-CG-CD2	131.20	125.99	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
CA-CB-CG	112.60	108.60	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	2.58	20
2	2.58	20
3	3.10	24
4	2.58	20
5	2.71	21
6	2.46	19

All 124 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	B:24:MET:HE3	B:28:LEU:HD12	0.644
1	A:87:LEU:HD13	C:1:HEM:HAD2	0.589
1	A:67:ARG:HH22	A:306:GLY:HA2	0.545
1	A:63:PHE:HB3	A:290:ARG:HB3	0.525
1	B:46:ALA:HB1	B:74:THR:HA	0.522
1	B:41:GLY:HA2	B:86:CYS:HB2	0.507
1	A:173:ASN:HA	A:384:ASN:HB2	0.497
1	A:36:VAL:HG11	A:303:ILE:HD11	0.476
1	A:128:LEU:HD11	A:141:LEU:HD13	0.465
1	B:94:LEU:HD22	B:97:LEU:HD13	0.461
1	A:30:LEU:HD22	A:37:VAL:HG21	0.454

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:350:GLY:HA3	C:1:HEM:C3C	0.454
1	A:171:VAL:HG11	D:1:ANN:H3	0.441
1	A:350:GLY:HA3	C:1:HEM:C4C	0.435
1	A:36:VAL:HG22	A:47:VAL:HG12	0.432
1	B:104:ARG:HD3	B:106:THR:O	0.430
1	A:62:THR:HG21	A:296:VAL:HG11	0.429
1	A:168:ALA:HB1	A:241:ASP:HB2	0.427
1	A:290:ARG:HA	A:290:ARG:HD3	0.420
1	A:319:ASP:HA	A:320:PRO:HD2	0.405
2	A:67:ARG:HH22	A:306:GLY:HA2	0.714
2	A:87:LEU:HD13	C:1:HEM:HAD2	0.603
2	B:41:GLY:HA2	B:86:CYS:HB2	0.582
2	A:168:ALA:HB1	A:241:ASP:HB2	0.552
2	A:290:ARG:HH21	A:346:HIS:CD2	0.497
2	B:94:LEU:HD22	B:97:LEU:HD13	0.481
2	A:173:ASN:HA	A:384:ASN:HB2	0.478
2	A:63:PHE:HB3	A:290:ARG:HB3	0.477
2	A:128:LEU:HD11	A:141:LEU:HD13	0.472
2	A:380:ARG:HG3	A:388:GLY:O	0.472
2	A:350:GLY:HA3	C:1:HEM:C3C	0.455
2	A:171:VAL:HG11	D:1:ANN:H3	0.452
2	A:174:ALA:HA	A:182:ARG:HG3	0.448
2	B:71:LEU:HD22	B:82:SER:HB3	0.435

Model ID	Atom-1	Atom-2	Clash overlap (Å)
2	A:350:GLY:HA3	C:1:HEM:C4C	0.431
2	A:167:TYR:HB2	A:192:HIS:HB3	0.423
2	A:319:ASP:HA	A:320:PRO:HD2	0.422
2	A:85:LEU:HB3	A:97:THR:HG21	0.415
2	B:37:ALA:HB1	B:40:GLY:HA2	0.407
2	A:290:ARG:HA	A:290:ARG:HD3	0.402
3	A:67:ARG:HH22	A:306:GLY:HA2	0.656
3	A:95:THR:HG23	B:44:VAL:HG12	0.645
3	A:87:LEU:HD13	C:1:HEM:HAD2	0.573
3	B:41:GLY:HA2	B:86:CYS:HB2	0.522
3	A:71:LEU:HD13	A:177:PRO:HB3	0.499
3	A:36:VAL:HG22	A:47:VAL:HG12	0.476
3	A:63:PHE:HB3	A:290:ARG:HB3	0.472
3	B:94:LEU:HD22	B:97:LEU:HD13	0.472
3	A:128:LEU:HD11	A:141:LEU:HD13	0.470
3	A:173:ASN:HA	A:384:ASN:HB2	0.467
3	A:49:ARG:HB2	A:52:GLU:OE1	0.461
3	A:350:GLY:HA3	C:1:HEM:C4C	0.459
3	A:67:ARG:HA	A:74:PHE:HB2	0.448
3	A:73:ASP:HB3	A:76:LYS:HD2	0.444
3	A:344:GLY:HA2	B:42:ASN:ND2	0.440
3	A:81:ARG:HH22	D:1:ANN:C1	0.430
3	A:171:VAL:HG11	D:1:ANN:H3	0.417

Model ID	Atom-1	Atom-2	Clash overlap (Å)
3	A:86:ILE:HG23	A:87:LEU:H	0.412
3	A:82:PRO:HA	A:83:PRO:HD3	0.411
3	A:380:ARG:HG3	A:388:GLY:O	0.408
3	A:13:ASP:HA	A:14:PRO:HD2	0.405
3	A:341:PHE:HB3	A:348:CYS:HB3	0.404
3	A:174:ALA:HA	A:182:ARG:HG3	0.402
3	A:138:ILE:HA	A:142:ALA:HB3	0.400
4	B:41:GLY:HA2	B:86:CYS:HB2	0.680
4	A:67:ARG:HH22	A:306:GLY:HA2	0.612
4	A:87:LEU:HD13	C:1:HEM:HAD2	0.556
4	A:168:ALA:HB1	A:241:ASP:HB2	0.529
4	B:94:LEU:HD22	B:97:LEU:HD13	0.498
4	A:36:VAL:HG11	A:303:ILE:HD11	0.489
4	A:110:MET:HG3	A:352:LEU:HB3	0.487
4	A:36:VAL:HG22	A:47:VAL:HG12	0.480
4	A:380:ARG:HG3	A:388:GLY:O	0.468
4	A:173:ASN:HA	A:384:ASN:HB2	0.462
4	A:63:PHE:HB3	A:290:ARG:HB3	0.457
4	A:67:ARG:HA	A:74:PHE:HB2	0.455
4	B:24:MET:HE3	B:28:LEU:HD12	0.453
4	A:71:LEU:HD13	A:177:PRO:HB3	0.447
4	A:174:ALA:HA	A:182:ARG:HG3	0.439
4	A:128:LEU:HD11	A:141:LEU:HD13	0.423

Model ID	Atom-1	Atom-2	Clash overlap (Å)
4	A:350:GLY:HA3	C:1:HEM:C3C	0.418
4	A:30:LEU:HD22	A:37:VAL:HG21	0.413
4	A:12:ILE:HG23	A:26:GLU:OE2	0.402
4	A:98:ARG:HD3	C:1:HEM:O2D	0.402
5	A:87:LEU:HD13	C:1:HEM:HAD2	0.586
5	A:168:ALA:HB1	A:241:ASP:HB2	0.582
5	A:290:ARG:HH21	A:346:HIS:CD2	0.503
5	A:71:LEU:HD13	A:177:PRO:HB3	0.502
5	B:94:LEU:HD22	B:97:LEU:HD13	0.490
5	A:380:ARG:HG3	A:388:GLY:O	0.489
5	A:350:GLY:HA3	C:1:HEM:C3C	0.474
5	A:173:ASN:HA	A:384:ASN:HB2	0.448
5	A:174:ALA:HA	A:182:ARG:HG3	0.448
5	A:63:PHE:HB3	A:290:ARG:HB3	0.446
5	A:85:LEU:HB3	A:97:THR:HG21	0.443
5	A:67:ARG:HA	A:74:PHE:HB2	0.440
5	A:67:ARG:HH22	A:306:GLY:HA2	0.432
5	A:128:LEU:HD11	A:141:LEU:HD13	0.428
5	A:81:ARG:HH22	D:1:ANN:C1	0.416
5	B:21:ASP:O	B:90:ILE:HG13	0.415
5	A:80:TRP:CG	A:81:ARG:H	0.414
5	A:138:ILE:HA	A:142:ALA:HB3	0.411
5	A:290:ARG:HA	A:290:ARG:HD3	0.409

Model ID	Atom-1	Atom-2	Clash overlap (Å)
5	A:200:CYS:SG	A:233:ARG:HB2	0.408
5	A:319:ASP:HA	A:320:PRO:HD2	0.402
6	A:347:MET:HG3	A:351:GLN:HE22	0.703
6	A:168:ALA:HB1	A:241:ASP:HB2	0.616
6	A:87:LEU:HD13	C:1:HEM:HAD2	0.605
6	B:75:ALA:HB1	B:104:ARG:HG2	0.564
6	A:290:ARG:HH21	A:346:HIS:CD2	0.525
6	B:41:GLY:HA2	B:86:CYS:HB2	0.497
6	A:128:LEU:HD11	A:141:LEU:HD13	0.493
6	A:174:ALA:HA	A:182:ARG:HG3	0.491
6	A:63:PHE:HB3	A:290:ARG:HB3	0.480
6	B:94:LEU:HD22	B:97:LEU:HD13	0.478
6	A:350:GLY:HA3	C:1:HEM:C3C	0.475
6	A:171:VAL:HG11	D:1:ANN:H3	0.466
6	A:381:ARG:HE	A:390:GLU:HG3	0.463
6	A:173:ASN:HA	A:384:ASN:HB2	0.462
6	A:95:THR:HG23	B:44:VAL:HG12	0.460
6	A:67:ARG:HH22	A:306:GLY:HA2	0.427
6	B:71:LEU:HD22	B:82:SER:HB3	0.420
6	A:71:LEU:HD13	A:177:PRO:HB3	0.414
6	A:73:ASP:HB3	A:76:LYS:HD2	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	501	440	46	15
2	501	453	38	10
3	501	448	38	15
4	501	448	43	10
5	501	455	36	10
6	501	454	34	13

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	401	361	22	18
2	401	363	25	13
3	401	358	32	11
4	401	365	24	12
5	401	361	27	13
6	401	362	26	13

Detailed list of outliers are tabulated below.

Model ID	Chain	Residue ID	Residue type
1	A	2	GLN
1	A	22	ASP
1	A	71	LEU
1	A	109	THR
1	A	122	ASP
1	A	127	GLU

Model ID	Chain	Residue ID	Residue type
1	A	192	HIS
1	A	199	GLN
1	A	225	PRO
1	A	237	SER
1	A	287	THR
1	A	291	THR
1	A	302	THR
1	A	332	THR
1	B	1	PRO
1	B	16	ASP
1	B	21	ASP
1	B	49	HIS
2	A	2	GLN
2	A	71	LEU
2	A	95	THR
2	A	122	ASP
2	A	192	HIS
2	A	199	GLN
2	A	237	SER
2	A	287	THR
2	A	291	THR
2	B	1	PRO
2	B	21	ASP

Model ID	Chain	Residue ID	Residue type
2	B	95	ASP
2	B	106	THR
3	A	22	ASP
3	A	109	THR
3	A	134	ASN
3	A	192	HIS
3	A	225	PRO
3	A	287	THR
3	A	291	THR
3	A	297	GLU
3	A	302	THR
3	B	49	HIS
3	B	104	ARG
4	A	71	LEU
4	A	122	ASP
4	A	192	HIS
4	A	224	THR
4	A	237	SER
4	A	287	THR
4	A	291	THR
4	B	1	PRO
4	B	21	ASP
4	B	24	MET

Model ID	Chain	Residue ID	Residue type
4	B	49	HIS
4	B	72	ASP
5	A	22	ASP
5	A	95	THR
5	A	109	THR
5	A	122	ASP
5	A	127	GLU
5	A	134	ASN
5	A	192	HIS
5	A	237	SER
5	A	287	THR
5	A	291	THR
5	B	49	HIS
5	B	95	ASP
5	B	104	ARG
6	A	2	GLN
6	A	22	ASP
6	A	95	THR
6	A	122	ASP
6	A	127	GLU
6	A	192	HIS
6	A	224	THR
6	A	226	GLU

Model ID	Chain	Residue ID	Residue type
6	A	237	SER
6	A	287	THR
6	A	291	THR
6	B	21	ASP
6	B	104	ARG

Fit of model to data used for modeling

Fit of model to data used for validation

Validation for this section is under development.

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