

Integrative Structure Validation Report

July 22, 2024 - 03:42 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	8ZZE
PDB-Dev ID	PDBDEV_00000014
Structure Title	Structure of 16S rRNA complexed with methyltransferase A small subunit
Structure Authors	van Zundert GCP; Melquiond ASJ; Bonvin AMJJ

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

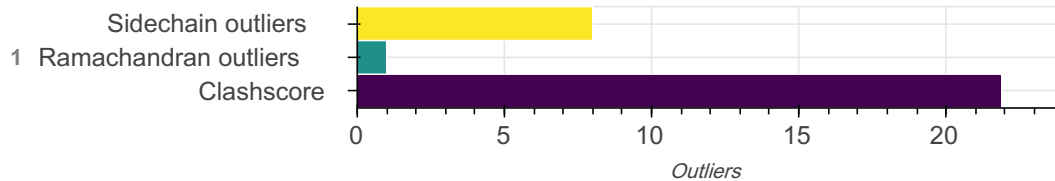
A user guide is available at https://pdb-dev.wwpdb.org/validation_help.html with specific help available everywhere you see the  symbol.

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 0 distinct ensemble(s).

Summary ?

This entry consists of 1 unique models, with 2 subunits in each model. A total of 4 datasets or restraints were used to build this entry. Each model is represented by 20 rigid bodies and 19 flexible or non-rigid units.

Entry composition ?

There is 1 unique type of models in this entry. This model is titled it1 ensemble/Best scoring model.

Model ID	Subunit number	Subunit ID	Subunit name	Chain ID	Chain ID [auth]	Total residues
1	1	1	16Srna	A	A	1530
1	2	2	ksga	B	V	252

Datasets used for modeling ?

There are 4 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Experimental model	PDB	4ADV
2	Mutagenesis data	File	10.1074/jbc.M111.318121
3	3DEM volume	EMDB	EMD-2017
4	Other	File	10.1038/nsmb.1408

Representation ?

This entry has only one representation and includes 20 rigid bodies and 19 flexible units

Chain ID	Rigid bodies	Non-rigid segments
A	1-754, 770-776, 781-785, 790-796, 800-886, 889-893, 899-1507, 1517-1530	755-769, 777-780, 786-789, 797-799, 887-888, 894-898, 1508-1516
B	3-97, 106-106, 108-123, 129-130, 132-136, 140-140, 145-161, 163-166, 174-197, 213-214, 216-228, 236-252	1-2, 98-105, 107-107, 124-128, 131-131, 137-139, 141-144, 162-162, 167-173, 198-212, 215-215, 229-235

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	Rigid-body minimization in HADDOCK (it0)	Rigid-body minimization	None	10000	False	False
2	1	Semi-flexible SA in HADDOCK (it1)	Simulated annealing	None	400	False	False

There are 2 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	HADDOCK	2.3	molecular docking	http://haddock.science.uu.nl/services/HADDOCK/
2	POWERFIT	2.0	em fitter	https://github.com/haddocking/powerfit

Data quality ?

3DEM volume

Validation for this section is under development.

Mutagenesis

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.

Standard geometry: bond outliers ?

There are 15655 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
O2'--HO2'	0.95	0.84	1
O2'--HO2'	0.96	0.84	1409
C3'--H3'	1.09	0.97	1410
C5'--H5'	1.09	0.97	1410
C5'--H5''	1.09	0.97	1410
N--H	0.98	0.86	232
C1'--H1'	1.09	0.97	1410
C4'--H4'	1.09	0.97	1410
C2'--H2'	1.09	0.97	1410
ND2--HD22	0.98	0.86	15
ND2--HD21	0.98	0.86	15
NE2--HE22	0.98	0.86	14
NE2--HE21	0.98	0.86	14
NE--HE	0.98	0.86	13
OG--HG	0.96	0.84	12
OH--HH	0.96	0.84	8

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
OG1--HG1	0.96	0.84	12
ND1--HD1	0.98	0.86	5
O3'--HO3'	0.96	0.84	1
O5'--HO5'	0.96	0.84	1
NE2--HE2	0.98	0.86	5
SG--HG	1.32	1.20	2
NH2--HH22	1.00	0.86	13
NH1--HH12	1.00	0.86	13
NH1--HH11	1.00	0.86	13
NH2--HH21	1.00	0.86	13
N1--H1	1.00	0.86	1
N3--H3	1.01	0.86	283
N6--H62	1.01	0.86	356
N1--H1	1.01	0.86	449
N4--H41	1.01	0.86	321
N2--H22	1.01	0.86	450
N6--H61	1.01	0.86	356
C8--H8	1.08	0.93	806
N--H2	1.04	0.89	1
N2--H21	1.01	0.86	450
N4--H42	1.01	0.86	321
NZ--HZ2	1.04	0.89	8
NZ--HZ1	1.04	0.89	8

Bond type	Observed distance (Å)	Ideal distance (Å)	Number of outliers
NZ--HZ3	1.04	0.89	8
N--H1	1.04	0.89	1
N--H3	1.04	0.89	1
C5--H5	1.09	0.93	604
C6--H6	1.09	0.93	604
C2--H2	1.09	0.93	356

Standard geometry: angle outliers

There are 176 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
C3'-O3'-O4'-C1'-C2'	107.40	60.35	1
C4'-O4'-C1'	110.00	154.97	1
O4'-C1'-C1'-N1-N7-C5-O2-C2-N3	122.20	74.77	1
O4'-C1'-N9	108.50	137.69	1
O4-C4-C5-C4-C2'-C1'-N9	112.40	84.45	1
C3'-O3'-P	120.20	99.40	1
N1-C2-O2	122.80	162.43	1
C6-C5-C4'-O4'-C4'-C3'-O3'	112.50	136.06	1
O4-C4-C5	125.90	91.04	1
C8-N7-C5	103.90	138.55	1
C3'-C2'-O3'-C3'-C2'	113.80	91.02	1
O2'-C2'-C1'	108.20	74.59	1
C1'-N1-C4'-C3'-N3-C4-C5	114.60	82.20	1
N7-C5-O3'-P-C8-N9-P-O5'-C5'	120.90	90.43	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
C5-C6-O6	128.60	98.57	1
C3'-O3'-P	120.20	135.10	1
N7-C5-C4	110.80	140.53	1
C3'-O3'-N7-C5-C6	132.30	161.45	1
C4'-C3'-O3'	112.50	83.76	1
C3'-O3'-P	120.20	134.48	1
C2'-C1'-C6-C5-C4	118.80	90.81	1
C2'-C1'-O4'-C1'-O3'-P-N7-C5-C4	110.70	83.85	1
C8-N7-C5	104.30	77.51	1
O3'-P-O5'	104.00	117.21	1
O2'-C2'-C1'	108.20	90.61	1
O6-C6-N1	119.90	146.28	1
C5'-C4'-O2'-C2'-C5-C6-C3'-O3'-P	120.20	132.62	1
O3'-C3'-C2'	109.50	121.81	1
C1'-N9-C3'-O3'-C3'-O3'-C3'-C2'-O2'	109.80	133.50	1
C3'-O3'-P	120.20	131.99	1
C4'-O4'-C5'-C4'-C3'-O3'-P	120.20	131.95	1
C1'-N9-C8	127.70	104.25	1
O4'-C4'-C3'	106.10	98.36	1
C3'-O3'-C3'-O3'-C3'-O3'-P	120.20	131.17	1
N1-C2-O2	122.80	101.41	1
N9-C4-C5	105.40	84.11	1
C3'-O3'-P	120.20	130.82	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
C5-C6-O4'-C1'-N7-C5-C3'-O3'-P	120.20	130.72	1
N9-C4-C3'-C2'-O2'	109.80	123.72	1
N3-C4-C3'-O3'-P	120.20	130.25	1
C3'-O3'-P	120.20	130.20	1
O4'-C4'-C5-C6-O3'-C3'-C2'	109.50	119.26	1
N9-C4-O3'-C3'-N7-C5-C6	130.40	111.15	1
N6-C6-N1	118.60	99.41	1
C1'-N1-C2	117.70	98.68	1
C3'-O3'-C4'-C3'-C3'-C2'-O2'	114.60	105.23	1
O3'-C3'-C2'	109.50	118.75	1
O1P-P-C4'-C3'-O3'	113.00	103.85	1
O3'-C3'-C3'-O3'-P	120.20	129.15	1
O2P-P-O5'	110.70	92.80	1
O2'-C2'-C1'	111.80	102.93	1
O3'-C3'-C2'	109.50	118.33	1
C3'-C2'-O2'	114.60	105.82	1
O3'-C3'-C3'-O3'-C3'-O3'-P	120.20	128.82	1
C4'-O4'-O3'-C3'-O2'-C2'-C2'-C1'-N1	114.00	105.75	1
C4'-C3'-O3'	109.40	101.17	1
C3'-O3'-P	120.20	128.42	1
C3'-O3'-P	120.20	111.99	1
C3'-C2'-O2'	114.60	106.46	1
N1-C2-N2	116.20	100.05	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
N2-C2-N3	119.90	103.80	1
C2-N3-C4	110.60	94.51	1
O3'-C3'-C2'	109.50	117.52	1
C5'-C4'-C4'-O4'-C1'	110.00	94.01	1
O1P-P-O5'	110.70	94.78	1
O3'-C3'-C2'	109.50	117.38	1
C2'-C1'-N9	112.00	104.14	1
C1'-N9-O4'-C4'-C3'	104.00	98.79	1
N9-C4-C4'-O4'-O3'-C3'-C2'	109.50	117.27	1
C4'-C3'-O3'	109.40	101.65	1
C2'-C1'-C3'-C2'-O3'-C3'-O3'-C3'-C2'	109.50	117.09	1
O4'-C4'-O3'-C3'-C2'	109.50	117.02	1
C3'-O3'-P	120.20	127.64	1
P-O5'-C4'-C3'-O4'-C1'-N1	108.20	115.56	1
C3'-C2'-C4'-C3'-C2'	102.30	116.96	1
C8-N7-P-O5'-C5'	120.90	113.61	1
P-O5'-C5'	120.90	113.62	1
O3'-C3'-C3'-C2'-O2'	114.60	107.37	1
C3'-O3'-P	120.20	127.40	1
C4'-C3'-O3'	113.00	105.84	1
C3'-C2'-O2'	114.60	107.44	1
C3'-C2'-O2'	114.60	107.45	1
O3'-C3'-C5'-C4'-C3'	116.00	106.49	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
O4'-C4'-C3'	106.10	101.35	1
C3'-C2'-O4'-C1'-C4'-C3'-O3'	113.00	105.90	1
O6-C6-O2'-C2'-C1'	111.80	104.71	1
C3'-O3'-C3'-O3'-C3'-C2'-O4'-C1'-N9	108.50	115.55	1
C3'-O3'-P	120.20	127.25	1
O3'-C3'-C2'	109.50	116.53	1
C3'-O3'-P	120.20	127.22	1
O3'-C3'-O2'-C2'-O4'-C4'-O4'-C4'-C3'	106.10	101.45	1
C2-N1-C6	121.00	107.12	1
C3'-C2'-O4'-C1'-C3'-O3'-O4'-C4'-C3'-C2'-O2'	114.60	107.71	1
O4'-C4'-O3'-C3'-O3'-C3'-C2'	109.50	116.35	1
O3'-C3'-C2'	109.50	116.35	1
C3'-O3'-P	120.20	127.04	1
O3'-C3'-O3'-C3'-C3'-O3'-P	120.20	127.01	1
C4'-O4'-C3'-C2'-O2'	114.60	107.83	1
C3'-O3'-P	120.20	126.95	1
O3'-C3'-C1'-N9-C4	126.30	139.78	1
O2P-P-C3'-C2'-O2'	114.60	107.87	1
N2-C2-C3'-C2'-C3'-C2'-C3'-C2'-O2'	114.60	107.92	1
O2'-C2'-C1'	111.80	105.12	1
C5'-C4'-C3'	116.00	109.33	1
C3'-C2'-O2'	114.60	107.93	1
O4'-C4'-C3'-C2'-O2'	114.60	107.94	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
O4'-C4'-C3'	106.10	101.66	1
C3'-O3'-P	120.20	126.83	1
O3'-C3'-C2'	109.50	116.09	1
O4'-C1'-C2'	105.80	110.19	1
OP1-P-O5'	108.00	121.10	1
O4'-C1'-C2'	107.40	120.48	1
C-N-CA	121.70	129.54	1
O3'-C3'-C2'	109.50	116.03	1
O4'-C4'-C3'	106.10	101.75	1
C3'-O3'-P	120.20	126.72	1
O4'-C4'-C4'-C3'-O3'	113.00	106.51	1
O4'-C1'-C2'	105.80	110.12	1
C4'-C3'-C2'	102.60	106.92	1
C4'-C3'-O3'	113.00	106.53	1
C4'-O4'-C1'	109.90	105.59	1
C4'-O4'-C3'-C2'-O2'	114.60	108.17	1
C3'-C2'-O2'	114.60	108.19	1
C4'-C3'-C3'-O3'-P	120.20	113.80	1
O3'-C3'-O1P-P-O2P	119.60	132.40	1
O4'-C1'-O4'-C1'-C2'	105.80	110.07	1
C3'-C2'-C3'-O3'-P	120.20	126.58	1
C3'-C2'-O2'	114.60	108.23	1
C2'-C1'-N9	114.00	107.63	1

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
C3'-O3'-C3'-C2'-O3'-P-O5'	104.00	110.36	1
C3'-C2'-O2'	114.60	108.24	1
O3'-C3'-C3'-C2'-O3'-C3'-C2'	109.50	115.82	1
P-O5'-O2'-C2'-C1'	111.80	105.49	1
O4'-C4'-C3'-C2'-O2'	114.60	108.31	1
C3'-O3'-O3'-C3'-O3'-C3'-C2'	109.50	115.78	1
O4'-C4'-C3'	106.10	101.91	1
C4'-O4'-C1'	109.90	105.71	1
O4'-C4'-C3'	106.10	101.92	1
C3'-C2'-O2'	114.60	108.33	1
C2-N3-C4	119.90	132.43	1
O3'-C3'-C2'	109.50	115.76	1
C4'-C3'-C3'-C2'-O2'	114.60	108.35	1
O3'-C3'-O3'-C3'-C2'	113.70	119.95	1
O3'-C3'-C2'	109.50	115.74	2
P-O5'-C5'	120.90	114.66	1
C3'-C2'-O2'	114.60	108.36	1
P-O5'-C5'	120.90	114.67	1
O3'-C3'-O4'-C4'-C6-C5-C5-C4-N3	128.60	141.02	1
O3'-C3'-C2'	109.50	115.70	1
C3'-C2'-P-O5'-O3'-C3'-O3'-C3'-C4'-O4'-C1'	109.90	105.79	1
C5-C6-N1	117.70	130.04	1
C3'-C2'-O2'	114.60	108.43	2

Angle type	Observed angle (°)	Ideal angle (°)	Number of outliers
C3'-C2'-O2'	114.60	108.44	2
C5'-C4'-C3'-C2'-O2'	114.60	108.46	1
O4'-C4'-O3'-C3'-C2'	109.50	115.63	1
O3'-C3'-C2'	109.50	115.62	1
O4'-C4'-C3'	104.00	108.08	1
C3'-O3'-P	120.20	126.32	1
O4'-C4'-O4'-C4'-C3'	106.10	110.18	1
C3'-C2'-O2'	114.60	108.49	1
C3'-O3'-P	120.20	126.31	1
C3'-O3'-C3'-C2'-O2'	114.60	108.49	1
O3'-C3'-C3'-C2'-O2'	114.60	108.51	1
C3'-C2'-C3'-C2'-O4'-C4'-C3'-C2'-O2'	114.60	108.54	1
O3'-C3'-C3'-C2'-O2'	114.60	108.56	1
C3'-O3'-O3'-C3'-C4'-C3'-O3'	113.00	106.97	1
C3'-C2'-O4'-C1'-C2'	105.80	109.82	1
O3'-C3'-C2'	109.50	115.52	2
C3'-C2'-O2'	114.60	108.58	1
C3'-C2'-O2'	114.60	108.59	1
C5'-O5'-HO5'	107.33	120.00	1
C3'-O3'-HO3'	107.30	120.00	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	21.89	1082

All 1082 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:11:G:C2	A:11:G:C6	1.635
1	A:12:A:C6	A:12:A:N6	1.586
1	A:12:A:C4	A:12:A:N3	1.539
1	A:13:U:C1'	A:13:U:N1	1.516
1	A:916:U:C2	A:916:U:O2	1.475
1	A:11:G:C2	A:11:G:N2	1.459
1	A:12:A:C2	A:12:A:N3	1.445
1	A:12:A:C4'	A:12:A:O4'	1.379
1	A:11:G:C6	A:11:G:O6	1.363
1	A:13:U:C3'	A:13:U:C4'	1.286
1	A:14:C:C4'	A:14:C:O4'	1.249
1	A:12:A:H1'	A:12:A:O4'	1.137
1	A:13:U:C1'	A:13:U:C2	1.113
1	A:12:A:C1'	A:12:A:C4'	1.028
1	A:11:G:C5	A:11:G:C6	1.021
1	A:12:A:C1'	A:12:A:O4'	1.004
1	A:13:U:C1'	A:13:U:C2'	0.963
1	A:13:U:C4	A:13:U:C5	0.908
1	A:695:C:H2'	A:696:G:H5''	0.892
1	A:239:A:H4'	A:240:U:H5'	0.890

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:12:A:N9	A:12:A:O4'	0.889
1	A:13:U:H2'	A:14:C:O4'	0.878
1	A:660:G:H22	A:737:G:H1	0.846
1	A:11:G:C4	A:11:G:C6	0.845
1	A:12:A:C2	A:12:A:C4	0.825
1	A:61:A:H2'	A:61:A:N3	0.816
1	A:836:C:H2'	A:838:U:H5''	0.804
1	A:74:A:H2'	A:75:G:C8	0.802
1	B:210:ARG:HE	B:229:PRO:HB2	0.788
1	A:235:U:H4'	A:235:U:OP1	0.778
1	A:11:G:C6	A:11:G:N1	0.776
1	A:942:A:H2'	A:943:G:C8	0.752
1	A:497:C:H2'	A:498:A:H8	0.749
1	A:433:U:H2'	A:434:U:O4'	0.744
1	A:83:C:H2'	A:84:U:H4'	0.742
1	A:12:A:C1'	A:12:A:C2'	0.737
1	A:760:C:H3'	A:761:G:H21	0.736
1	A:808:G:H2'	A:808:G:N3	0.734
1	A:386:U:H2'	A:387:G:C8	0.725
1	A:469:U:H2'	A:470:G:H8	0.724
1	A:918:G:H2'	A:919:A:C8	0.718
1	A:13:U:C4'	A:13:U:O3'	0.716
1	A:669:A:H2'	A:670:G:C8	0.716

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:12:A:C2'	A:12:A:O4'	0.716
1	A:497:C:H2'	A:498:A:C8	0.711
1	A:264:U:H2'	A:265:C:C6	0.710
1	A:514:C:H2'	A:526:G:C8	0.705
1	A:963:C:H3'	A:964:A:H5'	0.696
1	A:266:A:H2'	A:267:C:C6	0.694
1	A:13:U:C2'	A:14:C:O4'	0.690
1	A:101:G:H2'	A:102:C:C6	0.683
1	A:265:C:H2'	A:266:A:C8	0.680
1	A:127:A:H2'	A:128:C:C6	0.677
1	A:674:U:H2'	A:675:C:C6	0.677
1	A:201:A:H2'	A:202:C:H6	0.676
1	A:308:C:H2'	A:309:A:C8	0.675
1	A:885:A:H61	A:903:A:H3'	0.675
1	A:234:A:H2'	A:235:U:H5''	0.674
1	A:275:A:H5''	A:276:C:H3'	0.674
1	A:13:U:C1'	A:13:U:C6	0.672
1	A:265:C:H2'	A:266:A:H8	0.668
1	A:81:U:H4'	A:82:G:H4'	0.666
1	A:67:A:H61	A:95:C:H1'	0.665
1	A:555:A:H4'	A:556:A:H3'	0.665
1	A:520:G:H2'	A:521:C:C6	0.664
1	A:535:A:H2'	A:536:G:C8	0.664

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:184:C:H2'	A:185:A:O4'	0.662
1	A:408:A:H1'	A:409:G:H8	0.662
1	A:855:G:H2'	A:856:A:C8	0.662
1	A:914:A:H2'	A:915:A:C8	0.662
1	A:56:A:H4'	A:57:G:O5'	0.661
1	A:811:A:H62	A:66:U:C6	0.657
1	A:65:G:H2'	A:91:C:O2	0.655
1	A:91:C:H2'	A:75:G:H8	0.653
1	A:74:A:H2'	A:530:U:H2'	0.652
1	A:501:G:H5'	A:275:A:H62	0.650
1	A:274:G:H21	A:489:A:H62	0.650
1	A:437:A:H61	A:473:C:C6	0.649
1	A:472:U:H2'	A:54:C:C6	0.648
1	A:53:G:H2'	A:587:U:C6	0.646
1	A:586:U:H2'	A:696:G:H5''	0.645
1	A:695:C:C2'	A:76:A:C8	0.644
1	A:75:G:H2'	A:659:A:C8	0.644
1	A:658:U:H2'	A:623:G:C8	0.639
1	A:622:G:H2'	A:760:C:H6	0.636
1	A:759:G:H2'	A:14:C:C6	0.635
1	A:13:U:H2'	A:369:A:H5'	0.635
1	A:368:C:H4'	A:760:C:C6	0.632
1	A:759:G:H2'	A:90:G:H5''	0.631

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:89:U:H3'	A:448:A:O4'	0.631
1	A:447:A:H4'	A:269:U:H6	0.629
1	A:956:U:O2'	A:367:A:H8	0.629
1	A:268:C:H2'	A:284:A:H2'	0.628
1	A:366:C:H2'	A:557:U:H5''	0.628
1	A:114:U:O4	A:461:A:N6	0.625
1	A:556:A:H4'	A:209:G:H8	0.625
1	A:199:G:H1'	A:117:U:OP1	0.624
1	A:208:G:H2'	A:527:U:H6	0.624
1	A:117:U:H3'	A:54:C:H6	0.623
1	A:527:U:H5'	A:102:C:H6	0.623
1	A:53:G:H2'	A:587:U:H6	0.622
1	A:101:G:H2'	A:12:A:C1'	0.620
1	A:586:U:H2'	A:879:C:H5'	0.619
1	A:11:G:H2'	A:552:C:C6	0.618
1	A:878:C:O2'	A:88:U:C6	0.617
1	A:551:U:H2'	A:395:G:H8	0.617
1	A:87:U:H2'	A:980:C:OP2	0.617
1	A:394:U:H2'	A:964:A:C5'	0.616
1	A:979:A:H5'	A:69:C:H6	0.615
1	A:963:C:H3'	A:381:C:C6	0.614
1	A:68:A:H2'	A:781:G:H8	0.611
1	A:380:G:H2'	A:173:G:N3	0.610

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:780:A:H2'	A:332:A:C8	0.610
1	A:172:C:H2'	B:131:ARG:HH21	0.609
1	A:331:C:H2'	A:309:A:H8	0.608
1	B:128:VAL:HG22	A:937:G:C8	0.608
1	A:308:C:H2'	A:982:U:C6	0.608
1	A:936:C:H2'	A:984:G:H8	0.605
1	A:981:C:H2'	A:267:C:H6	0.603
1	A:983:G:H2'	A:199:G:C8	0.602
1	A:266:A:H2'	A:215:U:C6	0.600
1	A:198:G:H2'	A:800:U:C6	0.600
1	A:214:U:H2'	A:937:G:H8	0.600
1	A:799:G:H2'	A:865:G:H3'	0.599
1	A:936:C:H2'	A:545:C:H1'	0.597
1	A:854:G:O6	A:671:A:H8	0.596
1	A:497:C:H1'	A:984:G:C8	0.596
1	A:670:G:H2'	A:367:A:C8	0.593
1	A:983:G:H2'	A:387:G:H8	0.593
1	A:366:C:H2'	A:426:A:H5''	0.593
1	A:386:U:H2'	A:675:C:H6	0.593
1	A:425:U:H1'	A:829:G:H5'	0.592
1	A:674:U:H2'	A:14:C:H6	0.589
1	A:828:G:O2'	A:77:A:O4'	0.589
1	A:13:U:H2'	A:618:A:C8	0.589

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:76:A:H2'	A:157:A:O4'	0.588
1	A:617:A:H2'	A:446:G:C8	0.588
1	A:156:A:H2'	A:767:G:H8	0.588
1	A:445:G:H2'	A:310:C:C6	0.587
1	A:766:C:H2'	A:191:A:H5'	0.586
1	A:309:A:H2'	A:187:G:O4'	0.585
1	A:190:C:O2'	A:669:A:C8	0.585
1	A:186:A:H2'	A:842:G:N3	0.585
1	A:668:U:H2'	A:275:A:H62	0.584
1	A:842:G:H2'	A:862:C:C6	0.583
1	A:274:G:N2	A:902:A:H1'	0.582
1	A:861:A:H2'	A:160:G:O4'	0.581
1	A:240:U:O4	A:276:C:OP2	0.580
1	A:159:C:H2'	A:813:C:C4	0.580
1	A:275:A:H4'	A:917:U:C6	0.580
1	A:811:A:H4'	B:102:ILE:HD11	0.580
1	A:916:U:H2'	A:842:G:O4'	0.579
1	B:99:PRO:HD2	A:552:C:H6	0.577
1	A:841:A:H3'	A:474:A:C8	0.576
1	A:551:U:H2'	A:206:C:C5	0.575
1	A:974:A:H5'	A:12:A:C5	0.574
1	A:473:C:H2'	A:815:A:H5'	0.574
1	A:204:U:H2'	A:95:C:O2	0.574

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:11:G:C6	A:94:A:O4'	0.573
1	A:813:C:H1'	A:433:U:H5'	0.573
1	A:67:A:N6	A:633:C:C6	0.573
1	A:93:G:H2'	A:408:A:H4'	0.571
1	A:432:C:O2'	A:29:A:C8	0.570
1	A:632:U:H2'	A:709:G:H22	0.569
1	A:407:A:O2'	A:461:A:H62	0.567
1	A:28:A:H2'	A:369:A:OP2	0.567
1	A:673:U:H3	A:82:G:OP1	0.566
1	A:199:G:H1'	A:238:G:H5'	0.566
1	A:368:C:H1'	A:396:C:C6	0.566
1	A:82:G:H4'	A:510:C:H6	0.566
1	A:237:G:O2'	A:807:C:H5'	0.566
1	A:395:G:H2'	A:965:A:H5'	0.566
1	A:509:C:H2'	A:186:A:C8	0.565
1	A:806:C:O2'	A:211:C:C6	0.564
1	A:963:C:OP1	A:395:G:C8	0.563
1	A:185:A:H2'	A:626:A:O4'	0.563
1	A:210:C:H2'	A:12:A:H1'	0.562
1	A:394:U:H2'	A:420:G:O4'	0.561
1	A:625:A:H2'	A:921:G:H5'	0.561
1	A:11:G:N3	A:970:A:H5''	0.561
1	A:419:G:H2'	A:386:U:H6	0.559

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:920:C:O2'	A:976:C:O4'	0.559
1	A:969:G:H3'	A:841:A:H62	0.559
1	A:385:A:H3'	A:623:G:H8	0.558
1	A:975:C:H2'	A:314:G:H8	0.557
1	A:840:G:N2	A:856:A:H8	0.557
1	A:622:G:H2'	A:857:G:O4'	0.557
1	A:313:U:H2'	A:199:G:H8	0.556
1	A:855:G:H2'	A:269:U:C6	0.556
1	A:856:A:H2'	A:597:G:H8	0.556
1	A:198:G:H2'	A:635:G:O4'	0.556
1	A:268:C:H2'	A:761:G:H5'	0.556
1	A:596:A:H2'	B:124:LEU:HD22	0.556
1	A:634:U:H2'	A:193:A:O4'	0.554
1	A:760:C:C2'	A:471:C:C6	0.554
1	B:103:SER:HB2	A:639:C:C6	0.554
1	A:13:U:O1P	A:297:G:O4'	0.553
1	A:169:U:H5'	A:880:U:H5'	0.553
1	A:470:G:H2'	A:53:G:C8	0.551
1	A:638:A:H2'	A:583:G:H5'	0.551
1	A:296:A:H2'	A:69:C:C6	0.549
1	A:879:C:O2'	A:317:A:C8	0.549
1	A:52:U:H2'	A:733:C:C6	0.549
1	A:582:C:O2'	A:202:C:C6	0.548

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:68:A:H2'	A:479:C:O2'	0.548
1	A:316:A:H2'	A:11:G:N2	0.548
1	A:732:C:H2'	A:87:U:C6	0.547
1	A:201:A:H2'	A:804:C:C6	0.547
1	A:389:A:H5'	A:838:U:H5''	0.547
1	A:11:G:N1	A:126:A:C8	0.546
1	A:86:C:H2'	A:469:U:C6	0.546
1	A:803:A:H2'	A:762:A:H1'	0.546
1	A:836:C:C2'	A:906:C:O4'	0.546
1	A:125:A:H1'	A:294:A:H4'	0.545
1	A:468:U:H2'	A:674:U:C6	0.545
1	A:727:G:OP1	A:743:A:C8	0.544
1	A:905:A:H2'	A:763:A:O4'	0.544
1	A:2:G:H4'	A:764:A:C8	0.544
1	A:673:U:H2'	A:216:G:C8	0.543
1	A:742:A:H2'	A:405:U:H6	0.543
1	A:762:A:H2'	A:496:G:OP1	0.543
1	A:763:A:H2'	A:690:A:O4'	0.542
1	A:215:U:H2'	A:249:A:H8	0.541
1	A:404:A:H3'	A:125:A:C8	0.540
1	A:495:A:H4'	A:176:U:C6	0.540
1	A:689:G:H2'	A:808:G:OP1	0.540
1	A:248:U:H2'	A:74:A:C8	0.539

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:124:G:H2'	A:84:U:C4'	0.539
1	A:175:A:H2'	A:854:G:O4'	0.539
1	A:808:G:H4'	B:232:ARG:HA	0.539
1	A:73:A:H2'	A:30:C:C6	0.538
1	A:83:C:H2'	A:630:C:C6	0.538
1	A:853:C:H2'	A:33:U:O4'	0.537
1	B:208:THR:HA	B:106:LEU:HD21	0.537
1	A:29:A:H2'	A:165:C:H5'	0.536
1	A:629:G:H2'	A:927:C:O4'	0.536
1	A:32:C:H2'	A:215:U:H6	0.535
1	B:28:ILE:HD13	A:610:C:C6	0.535
1	A:164:G:O2'	A:821:A:H8	0.535
1	A:926:C:H2'	A:918:G:O4'	0.535
1	A:214:U:H2'	A:213:C:C6	0.534
1	A:609:C:H2'	A:218:C:O2'	0.533
1	A:820:G:H2'	A:332:A:H8	0.533
1	A:917:U:H2'	A:400:G:H5'	0.533
1	A:212:U:H2'	A:737:G:H1	0.533
1	A:191:A:H1'	A:325:A:H5''	0.531
1	A:331:C:H2'	A:412:G:H8	0.531
1	A:399:C:O2'	A:232:A:C8	0.530
1	A:660:G:N2	A:674:U:H6	0.530
1	A:324:C:H4'	A:87:U:H6	0.529

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:411:A:H3'	A:248:U:H5'	0.529
1	A:231:C:H2'	A:334:A:C8	0.529
1	A:673:U:H2'	A:597:G:C8	0.529
1	A:86:C:H2'	A:803:A:H8	0.529
1	A:247:G:H4'	A:95:C:C6	0.528
1	A:333:G:H2'	A:211:C:H6	0.528
1	A:596:A:H2'	A:263:C:H5	0.527
1	A:802:C:H2'	A:950:G:O4'	0.527
1	A:94:A:H2'	A:994:C:H5'	0.527
1	A:210:C:H2'	A:534:G:C8	0.526
1	A:261:G:H2'	A:117:U:H5''	0.525
1	A:949:G:H2'	A:459:U:H5''	0.525
1	A:993:U:O2'	A:902:A:H2	0.525
1	A:974:A:HO2'	A:473:C:H6	0.524
1	A:533:G:H2'	A:588:G:H8	0.524
1	A:116:A:H2'	B:231:MET:HG3	0.524
1	A:458:G:H3'	A:633:C:H6	0.523
1	A:888:A:N7	A:656:C:C6	0.523
1	A:472:U:H2'	A:705:U:C6	0.523
1	A:587:U:H2'	A:803:A:C8	0.523
1	B:228:ASP:HB3	A:423:U:C6	0.522
1	A:632:U:H2'	A:835:C:O4'	0.522
1	A:655:U:H2'	A:13:U:O4'	0.521

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:704:C:H2'	A:209:G:C8	0.521
1	A:802:C:H2'	A:542:A:H5'	0.521
1	A:422:U:H2'	A:30:C:H6	0.520
1	A:834:G:H2'	A:604:A:C8	0.520
1	A:13:U:C4'	A:731:C:C6	0.520
1	A:208:G:H2'	A:943:G:H8	0.520
1	A:541:C:O2'	A:972:G:OP2	0.520
1	A:29:A:H2'	A:761:G:H5'	0.519
1	A:603:A:H2'	A:50:C:H1'	0.518
1	A:730:G:H2'	A:599:U:H5'	0.518
1	A:942:A:H2'	A:838:U:H4'	0.518
1	A:971:A:H4'	A:61:A:N3	0.518
1	A:760:C:H2'	A:95:C:H1'	0.517
1	A:49:A:C2	A:430:U:O2	0.517
1	A:598:A:O2'	A:598:A:C8	0.517
1	A:836:C:C2	A:249:A:C8	0.516
1	A:61:A:C2'	A:252:U:C6	0.516
1	A:67:A:N6	A:739:A:H5'	0.516
1	A:430:U:H2'	A:186:A:O5'	0.516
1	A:597:G:H2'	A:107:G:O4'	0.515
1	A:248:U:H2'	A:31:G:C8	0.514
1	A:251:G:H2'	A:306:G:H8	0.514
1	A:738:G:O2'	A:510:C:C6	0.514

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:186:A:H8	A:953:U:H5'	0.514
1	A:106:C:H2'	A:605:A:O4'	0.513
1	A:30:C:H2'	A:834:G:H8	0.513
1	A:305:A:H2'	B:227:ILE:HD12	0.513
1	A:509:C:H2'	A:549:A:C8	0.512
1	A:952:U:O2'	A:314:G:C8	0.511
1	A:604:A:H2'	A:53:G:H8	0.510
1	A:833:U:H2'	A:690:A:OP2	0.510
1	B:225:MET:HE3	A:748:G:O4'	0.510
1	A:548:U:H2'	B:93:ARG:HB2	0.510
1	A:313:U:H2'	A:330:C:C6	0.509
1	A:52:U:H2'	A:538:G:H8	0.508
1	A:688:U:H2'	A:639:C:H6	0.508
1	A:747:U:H2'	A:330:C:H6	0.507
1	B:25:MET:HE3	A:861:A:C8	0.507
1	A:329:U:H2'	A:816:U:C4	0.506
1	A:537:G:H2'	A:908:C:C6	0.506
1	A:638:A:H2'	A:207:G:H5''	0.505
1	A:329:U:H2'	A:298:G:H8	0.505
1	A:860:A:H2'	A:385:A:N3	0.504
1	A:566:G:H1'	A:708:A:H5'	0.504
1	A:907:U:H2'	A:821:A:H5'	0.504
1	A:206:C:H4'	A:534:G:H8	0.503

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:297:G:H2'	A:947:G:C8	0.502
1	A:385:A:H2'	A:292:U:C6	0.501
1	A:707:G:O2'	A:415:C:H6	0.501
1	A:820:G:O2'	A:606:U:O4'	0.501
1	A:533:G:H2'	A:944:C:C6	0.500
1	A:946:U:H2'	A:875:C:OP1	0.500
1	A:291:C:H2'	A:298:G:C8	0.499
1	A:414:C:H2'	A:839:U:OP2	0.498
1	A:606:U:O2	A:300:U:O4'	0.497
1	A:943:G:H2'	A:562:G:N2	0.497
1	A:581:G:O2'	B:207:LYS:HE2	0.497
1	A:297:G:H2'	A:12:A:N6	0.497
1	A:837:C:H3'	A:111:G:C8	0.495
1	A:762:A:H2	A:44:C:H5	0.494
1	A:299:A:H2'	A:235:U:H5''	0.494
1	A:556:A:H5'	A:598:A:H8	0.494
1	A:766:C:H5''	A:660:G:H5'	0.494
1	A:12:A:N1	A:263:C:H3'	0.493
1	A:110:U:H2'	A:489:A:H5''	0.493
1	A:27:G:H2'	A:296:A:C8	0.492
1	A:234:A:C2'	A:671:A:C8	0.492
1	A:597:G:H2'	A:966:C:O2	0.492
1	A:659:A:O2'	A:12:A:H1'	0.491

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:262:G:O2'	B:93:ARG:CB	0.491
1	A:488:C:H2'	A:46:A:H2'	0.490
1	A:295:G:H2'	A:106:C:OP2	0.490
1	A:670:G:H2'	A:144:G:C8	0.490
1	A:965:A:N3	A:486:C:C6	0.490
1	A:11:G:H2'	A:625:A:C8	0.490
1	B:25:MET:HE3	B:244:MET:HG2	0.490
1	A:45:U:O2'	A:19:C:C6	0.489
1	A:105:A:H4'	A:188:A:C8	0.489
1	A:143:G:H2'	A:468:U:H6	0.489
1	A:485:C:H2'	A:972:G:O5'	0.489
1	A:624:G:H2'	A:31:G:H8	0.488
1	B:225:MET:HE1	A:488:C:C6	0.488
1	A:18:G:H2'	A:831:U:C6	0.488
1	A:187:G:H2'	A:231:C:C6	0.487
1	A:467:U:H2'	A:281:C:H6	0.487
1	A:971:A:H5''	A:910:A:O4'	0.487
1	A:30:C:H2'	A:18:G:C8	0.486
1	A:487:G:H2'	A:190:C:C6	0.486
1	A:830:U:H2'	A:509:C:C6	0.486
1	A:230:C:H2'	A:709:G:H5'	0.486
1	A:280:C:H2'	A:217:C:H5'	0.485
1	A:909:A:H1'	A:439:C:C6	0.485

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:17:G:H2'	A:445:G:C8	0.485
1	A:189:C:H2'	A:624:G:C8	0.485
1	A:508:U:H2'	A:205:U:H5''	0.484
1	A:708:A:O2'	A:232:A:H8	0.484
1	A:216:G:O2'	A:57:G:O4'	0.483
1	A:438:G:H2'	A:646:G:O4'	0.483
1	A:444:A:H2'	A:774:G:C8	0.483
1	A:623:G:H2'	A:913:G:H8	0.483
1	A:204:U:C2'	A:379:A:C8	0.482
1	A:231:C:H2'	A:340:A:H2'	0.481
1	A:932:C:H1'	A:468:U:C6	0.481
1	A:56:A:H1'	A:944:C:H6	0.481
1	A:645:A:H2'	A:367:A:H5'	0.480
1	A:773:A:H2'	A:459:U:C6	0.480
1	A:912:U:H2'	A:705:U:H6	0.480
1	A:378:A:H2'	A:743:A:H8	0.480
1	A:339:U:O2'	A:919:A:H8	0.480
1	A:467:U:H2'	A:76:A:O4'	0.479
1	A:943:G:H2'	A:154:G:H5'	0.479
1	A:366:C:O2'	A:221:C:C6	0.479
1	A:458:G:H2'	A:389:A:H8	0.479
1	A:704:C:H2'	A:947:G:H8	0.479
1	A:742:A:H2'	A:281:C:C6	0.478

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:918:G:H2'	A:808:G:OP1	0.478
1	A:75:G:H2'	B:68:LYS:HG2	0.478
1	A:153:U:O2'	A:207:G:N1	0.478
1	A:220:U:H2'	A:259:A:OP2	0.477
1	A:388:C:H2'	A:322:G:O4'	0.476
1	A:946:U:H2'	A:391:C:C6	0.476
1	A:280:C:H2'	A:544:G:O3'	0.476
1	A:808:G:C4'	A:875:C:C6	0.476
1	B:44:ASP:O	A:152:C:O4'	0.474
1	A:204:U:O2	A:318:C:H5'	0.474
1	A:257:U:H2'	A:595:C:C6	0.474
1	A:321:A:H2'	A:128:C:H6	0.473
1	A:390:G:H2'	A:11:G:N3	0.473
1	A:542:A:H4'	A:817:G:OP2	0.472
1	A:874:A:H2'	A:979:A:O4'	0.472
1	A:151:A:H2'	B:169:PRO:HD2	0.472
1	A:317:A:O2'	A:137:G:H8	0.471
1	A:594:U:H2'	A:682:U:H5'	0.470
1	A:127:A:H2'	A:761:G:N2	0.470
1	A:11:G:N2	A:22:A:C8	0.469
1	A:816:U:H4'	A:808:G:N3	0.469
1	A:978:U:H4'	A:363:U:OP1	0.469
1	B:162:PRO:HA	A:164:G:H5'	0.468

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:136:U:H2'	A:380:G:O4'	0.468
1	A:681:G:O2'	A:809:U:H6	0.468
1	A:760:C:H3'	A:44:C:C5	0.467
1	A:21:C:H2'	A:188:A:H8	0.467
1	A:808:G:C2'	A:221:C:H6	0.467
1	A:362:A:O2'	A:234:A:H8	0.467
1	A:163:A:O2'	A:815:A:H5''	0.467
1	A:379:A:H2'	A:912:U:H5'	0.467
1	A:808:G:HO2'	A:955:A:OP2	0.467
1	A:27:G:H2'	A:13:U:O2'	0.466
1	A:187:G:H2'	A:116:A:O4'	0.466
1	A:220:U:H2'	A:391:C:H6	0.466
1	A:233:G:H2'	A:535:A:C8	0.466
1	A:814:G:C3'	A:902:A:N6	0.466
1	A:911:A:H2'	A:110:U:C6	0.465
1	A:953:U:H2'	A:251:G:H5'	0.465
1	A:13:U:C2'	A:19:C:H6	0.464
1	A:115:A:H4'	A:167:A:O2'	0.464
1	A:390:G:H2'	A:172:C:H6	0.464
1	A:534:G:H2'	A:258:A:N1	0.463
1	A:886:G:O2'	A:844:C:C6	0.463
1	A:109:G:H2'	A:234:A:C8	0.462
1	A:250:G:O2'	A:553:G:H5'	0.462

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:18:G:H2'	A:624:G:H8	0.462
1	A:64:G:H5'	A:733:C:H6	0.462
1	A:171:C:H2'	A:758:U:C6	0.462
1	A:228:G:H1'	A:825:G:O5'	0.462
1	A:843:G:H2'	A:890:G:H8	0.462
1	A:233:G:H2'	A:842:G:N3	0.462
1	A:552:C:O2'	A:381:C:H6	0.460
1	A:623:G:H2'	A:471:C:H6	0.460
1	A:732:C:H2'	A:602:G:C8	0.460
1	A:757:G:H2'	A:608:C:H6	0.459
1	A:824:U:H2'	A:91:C:H5	0.458
1	A:889:C:H2'	A:485:C:H6	0.458
1	A:840:G:N7	A:669:A:H8	0.458
1	A:380:G:H2'	A:917:U:H6	0.458
1	A:470:G:H2'	A:841:A:H62	0.458
1	A:601:U:H2'	A:551:U:C6	0.457
1	A:607:C:H2'	A:706:G:H8	0.457
1	A:89:U:H2'	A:858:C:C6	0.457
1	A:484:C:H2'	A:921:G:H8	0.457
1	A:668:U:H2'	A:956:U:H5''	0.457
1	A:916:U:H2'	A:966:C:O2	0.457
1	A:840:G:H21	A:839:U:OP1	0.457
1	A:550:A:H2'	A:235:U:H5''	0.456

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:705:U:H2'	A:320:G:O4'	0.456
1	A:857:G:H2'	A:355:G:C8	0.456
1	A:920:C:H2'	A:422:U:C6	0.456
1	A:953:U:H3	A:645:A:C8	0.456
1	A:965:A:H2'	A:677:A:H8	0.456
1	A:837:C:H6	A:815:A:H5''	0.456
1	A:234:A:C3'	A:858:C:H6	0.456
1	A:319:U:H2'	A:248:U:C5'	0.455
1	A:354:U:H2'	A:554:G:H1'	0.455
1	A:421:G:H2'	A:860:A:C6	0.455
1	A:644:A:H2'	A:945:A:H5'	0.455
1	A:676:C:H2'	A:227:U:H5'	0.454
1	A:814:G:H3'	A:234:A:H5'	0.454
1	A:857:G:H2'	A:477:G:H1'	0.454
1	A:247:G:H4'	A:371:U:C6	0.454
1	A:22:A:H61	A:486:C:H6	0.454
1	A:568:A:C2	A:632:U:C6	0.454
1	A:944:C:O2'	A:818:U:C6	0.454
1	A:811:A:N6	A:176:U:H6	0.453
1	A:226:G:O2'	A:877:G:H8	0.453
1	A:233:G:O2'	A:426:A:O5'	0.453
1	A:369:A:H1'	A:14:C:C6	0.452
1	A:370:A:H2'	A:890:G:C8	0.452

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:485:C:H2'	A:275:A:N6	0.452
1	A:631:A:H2'	A:95:C:H1'	0.451
1	A:817:G:H2'	A:137:G:C8	0.451
1	A:175:A:H2'	A:235:U:H5''	0.451
1	A:876:C:H2'	A:700:A:C5	0.451
1	A:425:U:H4'	A:688:U:C6	0.451
1	A:13:U:C2'	A:233:G:H8	0.450
1	A:889:C:H2'	A:706:G:C8	0.450
1	A:274:G:H21	A:57:G:P	0.450
1	A:67:A:N1	A:38:G:H8	0.449
1	A:136:U:H2'	A:46:A:H2'	0.449
1	A:234:A:H3'	A:91:C:C5	0.449
1	A:683:A:C2	A:179:C:C5	0.449
1	A:687:G:H2'	A:220:U:C6	0.449
1	A:232:A:H2'	A:920:C:C6	0.449
1	A:705:U:H2'	A:38:G:C8	0.448
1	A:56:A:HO2'	A:399:C:H6	0.448
1	A:37:G:H2'	A:563:G:C8	0.448
1	A:45:U:HO2'	A:588:G:C8	0.448
1	A:89:U:H2'	A:151:A:C8	0.447
1	A:178:A:H1'	A:159:C:O4'	0.447
1	A:219:A:H2'	A:470:G:N7	0.447
1	A:919:A:H2'	A:708:A:H8	0.447

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:37:G:H2'	A:917:U:H5'	0.447
1	A:398:G:H2'	A:916:U:O2	0.447
1	A:559:A:H2'	A:325:A:O4'	0.446
1	A:587:U:H2'	A:459:U:C5'	0.446
1	A:150:U:H2'	A:481:U:H5'	0.446
1	A:158:A:H2'	A:810:A:H5'	0.446
1	A:469:U:C2	A:308:C:H5'	0.445
1	A:707:G:H2'	A:986:C:H6	0.445
1	A:916:U:O2'	B:169:PRO:HD3	0.445
1	A:916:U:N1	A:774:G:H8	0.444
1	A:323:A:H1'	A:411:A:O4'	0.444
1	A:458:G:H3'	A:84:U:H1'	0.443
1	A:480:G:H4'	A:141:G:C8	0.443
1	A:809:U:O2'	A:409:G:H1'	0.443
1	A:119:U:OP1	A:418:C:C5	0.443
1	A:985:U:H2'	A:536:G:H8	0.443
1	B:165:PHE:HB2	A:767:G:H5'	0.443
1	A:773:A:H2'	A:964:A:N3	0.443
1	A:411:A:N3	A:982:U:H6	0.443
1	A:83:C:N3	A:141:G:O4'	0.442
1	A:140:G:H2'	A:233:G:C8	0.442
1	A:407:A:C4	A:333:G:H5'	0.442
1	A:417:U:H5'	A:452:A:C8	0.442

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:535:A:H2'	A:608:C:C6	0.442
1	A:766:C:O2'	A:708:A:C8	0.442
1	A:964:A:H5'	A:766:C:H5'	0.442
1	A:981:C:H2'	A:860:A:C5	0.442
1	A:974:A:O2'	A:171:C:H5'	0.441
1	A:140:G:H2'	A:490:G:O6	0.441
1	A:232:A:H2'	A:548:U:C6	0.441
1	A:332:A:O2'	A:634:U:C6	0.441
1	A:451:G:H2'	A:735:C:C6	0.441
1	A:607:C:H2'	A:201:A:H61	0.441
1	A:707:G:H2'	A:229:C:O4'	0.440
1	A:765:G:O2'	A:235:U:H6	0.440
1	A:568:A:N1	A:602:G:H8	0.440
1	A:170:A:O2'	A:679:G:H5'	0.440
1	A:434:U:H2'	A:173:G:O4'	0.440
1	A:547:U:H2'	A:84:U:H1'	0.439
1	A:633:C:H2'	A:475:U:O4'	0.439
1	A:734:C:H2'	A:583:G:H5'	0.439
1	A:199:G:N2	A:599:U:C6	0.439
1	A:228:G:H2'	A:677:A:C8	0.439
1	A:235:U:C5'	A:800:U:H6	0.439
1	A:601:U:H2'	A:574:C:H5'	0.438
1	A:678:G:O2'	A:618:A:H8	0.438

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:173:G:N3	A:632:U:H6	0.438
1	A:83:C:C2	A:967:G:OP1	0.438
1	A:474:A:H2'	A:2:G:C2	0.437
1	A:582:C:C2'	A:451:G:H5'	0.437
1	A:598:A:H2'	A:19:C:H5'	0.436
1	A:676:C:H2'	A:350:G:H4'	0.436
1	A:799:G:H2'	A:470:G:N7	0.436
1	A:573:G:O2'	A:164:G:H8	0.435
1	A:617:A:H2'	A:460:U:OP2	0.435
1	A:631:A:H2'	A:784:U:H5'	0.435
1	A:967:G:H3'	A:815:A:H5''	0.435
1	A:1:U:H1'	A:898:G:H1'	0.435
1	A:450:G:O2'	A:910:A:O5'	0.435
1	A:18:G:O2'	A:179:C:H5	0.434
1	A:109:G:O4'	A:299:A:H8	0.434
1	A:469:U:N3	A:389:A:C8	0.434
1	A:163:A:H2'	A:609:C:C6	0.434
1	A:459:U:H5'	A:610:C:H6	0.434
1	A:783:A:O2'	A:8:U:C6	0.433
1	A:814:G:O2'	A:915:A:H2	0.433
1	A:897:A:C5	A:379:A:H5'	0.432
1	A:909:A:O2'	A:844:C:H6	0.432
1	A:178:A:H1'	A:120:C:C6	0.431

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:298:G:H2'	A:216:G:H8	0.431
1	A:388:C:H2'	A:355:G:H8	0.431
1	A:608:C:H2'	A:644:A:H5'	0.431
1	A:609:C:H2'	A:721:G:N2	0.431
1	A:7:G:H2'	A:911:A:H5'	0.431
1	A:12:A:N1	A:341:C:C4	0.430
1	A:378:A:O2'	A:775:C:H5'	0.430
1	A:843:G:H2'	A:868:A:C8	0.430
1	A:119:U:H2'	A:252:U:H6	0.429
1	A:215:U:H2'	A:396:C:H6	0.429
1	A:354:U:H2'	A:470:G:C8	0.429
1	A:643:C:O2'	A:496:G:H5'	0.429
1	A:661:A:H2'	A:924:G:H5'	0.429
1	A:810:A:H5'	A:544:G:O5'	0.428
1	A:910:A:O2'	A:704:C:C6	0.428
1	A:339:U:H2'	A:711:A:C8	0.428
1	A:774:G:O2'	B:123:MET:HB3	0.428
1	A:865:G:H4'	B:174:ALA:HB3	0.428
1	A:251:G:H2'	A:48:C:OP2	0.427
1	A:395:G:H2'	A:307:C:O2'	0.427
1	A:469:U:C2	A:734:C:H6	0.427
1	A:495:A:H4'	A:916:U:C2	0.427
1	A:923:G:O2'	A:489:A:O4'	0.427

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:543:A:H4'	A:341:C:C5	0.426
1	A:703:U:H2'	A:429:G:H5'	0.426
1	A:710:G:H2'	A:349:A:H8	0.426
1	B:97:ASN:HA	A:57:G:P	0.426
1	B:129:VAL:HG21	A:32:C:C6	0.425
1	A:47:A:H4'	A:282:C:H6	0.425
1	A:119:U:H5''	A:318:C:H6	0.425
1	A:733:C:H2'	A:590:U:C6	0.425
1	A:12:A:N1	B:235:ASN:HB2	0.425
1	A:489:A:N3	A:955:A:H8	0.425
1	A:339:U:H2'	A:415:C:C6	0.424
1	A:428:A:C2'	A:869:A:C2	0.424
1	A:109:G:H21	A:25:U:O4'	0.423
1	A:56:A:O2'	A:248:U:C5	0.423
1	A:31:G:H2'	A:394:U:OP1	0.423
1	A:281:C:H2'	A:538:G:C8	0.423
1	A:317:A:H2'	A:32:C:H6	0.422
1	A:589:U:H2'	A:84:U:O2	0.422
1	B:231:MET:HB3	A:467:U:H6	0.422
1	A:953:U:O2	A:502:G:C8	0.422
1	A:414:C:H2'	A:666:G:H5'	0.422
1	A:566:G:C6	A:845:G:O4'	0.421
1	A:966:C:C5	A:183:G:O4'	0.420

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:990:A:C5	A:630:C:H6	0.420
1	A:24:A:H2'	A:956:U:O4'	0.420
1	A:246:A:H1'	A:91:C:O2	0.420
1	A:393:A:H5'	A:431:A:C8	0.419
1	A:537:G:H2'	A:554:G:H1'	0.419
1	A:31:G:H2'	A:596:A:H5'	0.419
1	A:78:G:C6	A:659:A:H8	0.419
1	A:466:C:H2'	A:977:U:H5'	0.419
1	A:501:G:H2'	A:428:A:H8	0.418
1	A:665:G:O2'	A:522:C:C6	0.418
1	A:844:C:H2'	A:692:A:C8	0.418
1	A:182:C:H2'	A:726:G:H8	0.418
1	A:629:G:H2'	A:815:A:H5''	0.418
1	A:955:A:H2'	A:85:U:C6	0.417
1	A:91:C:C2'	A:464:A:H8	0.417
1	A:430:U:H2'	A:535:A:H8	0.417
1	A:22:A:N6	A:581:G:H8	0.417
1	A:595:C:O2'	A:741:G:C8	0.417
1	A:658:U:H2'	A:891:G:H5'	0.417
1	A:976:C:H2'	A:111:G:H5'	0.416
1	A:427:A:H2'	A:477:G:H1'	0.416
1	A:521:C:H2'	A:548:U:H5'	0.416
1	A:691:A:H2'	A:596:A:H8	0.416

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:725:A:H2'	B:73:GLN:HA	0.416
1	A:814:G:C2'	A:363:U:OP1	0.416
1	A:84:U:O2'	A:75:G:H5'	0.415
1	A:198:G:H1'	A:391:C:H1'	0.415
1	A:534:G:H2'	A:564:G:O4'	0.415
1	A:580:G:H2'	A:734:C:C6	0.415
1	A:740:C:H2'	A:805:G:H8	0.415
1	A:890:G:O2'	A:849:C:C6	0.415
1	A:110:U:O2'	A:363:U:P	0.415
1	A:369:A:C1'	A:158:A:C8	0.414
1	A:547:U:O2'	A:337:C:H6	0.414
1	A:595:C:H2'	A:489:A:H62	0.414
1	B:50:GLU:O	A:908:C:H6	0.413
1	A:362:A:H4'	A:166:U:C2	0.412
1	A:74:A:O2'	A:331:C:H6	0.412
1	A:363:U:OP1	A:430:U:O4'	0.412
1	A:563:G:H2'	A:489:A:H5''	0.412
1	A:733:C:H2'	A:893:C:H5'	0.412
1	A:804:C:H2'	A:58:U:C6	0.411
1	A:848:G:H2'	A:172:C:C6	0.411
1	A:362:A:O2'	A:178:A:H5''	0.411
1	A:157:A:H2'	A:230:C:H5'	0.411
1	A:336:U:H2'	A:288:G:H5'	0.411

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:437:A:N6	A:329:U:H6	0.411
1	A:907:U:H2'	A:497:C:C6	0.411
1	A:148:A:N6	A:737:G:H5'	0.411
1	A:330:C:H2'	A:350:G:H5'	0.410
1	A:429:G:H2'	A:549:A:H8	0.410
1	A:488:C:C2'	A:884:G:O4'	0.410
1	A:892:C:O2'	A:52:U:O5'	0.410
1	A:57:G:H2'	A:424:G:O6	0.410
1	A:171:C:H2'	A:399:C:C6	0.409
1	A:178:A:N3	A:595:C:H6	0.409
1	A:229:C:O2'	A:619:C:H5'	0.409
1	A:287:U:O2'	A:649:U:C5	0.409
1	A:328:G:H2'	A:694:G:H5'	0.409
1	A:496:G:H2'	A:12:A:C6	0.408
1	A:736:U:O2'	A:383:U:H5'	0.408
1	A:109:G:H1'	A:409:G:C8	0.408
1	A:548:U:H2'	A:834:G:C8	0.408
1	A:765:G:H4'	A:994:C:C6	0.408
1	A:883:G:H2'	A:216:G:H22	0.408
1	A:52:U:H6	A:390:G:N2	0.408
1	A:411:A:N1	A:422:U:H5'	0.408
1	A:398:G:H2'	A:860:A:H1'	0.407
1	A:594:U:H2'	A:377:C:C4	0.407

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:618:A:H2'	A:451:G:H8	0.407
1	A:648:U:H1'	A:498:A:H5'	0.407
1	A:693:U:H2'	A:656:C:H6	0.407
1	A:11:G:C6	A:793:C:H5'	0.407
1	A:382:C:C2'	A:903:A:H5''	0.407
1	A:408:A:H1'	A:316:A:H5'	0.407
1	A:833:U:H2'	A:334:A:H5'	0.407
1	A:993:U:H2'	B:54:ASP:HB2	0.407
1	A:941:G:N1	A:582:C:H5'	0.406
1	A:139:A:H2	A:371:U:H6	0.406
1	A:362:A:O2'	A:426:A:OP1	0.406
1	A:421:G:O2'	A:953:U:O4'	0.406
1	A:15:A:H1'	A:522:C:H4'	0.405
1	A:61:A:N7	A:581:G:C8	0.405
1	A:450:G:H2'	A:673:U:H5'	0.405
1	A:497:C:O2'	A:781:G:C8	0.405
1	A:655:U:H2'	A:654:C:H5'	0.405
1	A:792:C:O2'	A:135:A:H5'	0.404
1	A:885:A:N1	A:167:A:H1'	0.404
1	A:315:G:O2'	A:485:C:C6	0.404
1	A:333:G:O2'	A:509:C:H5'	0.404
1	B:52:ASP:OD1	A:548:U:H6	0.404
1	A:581:G:O2'	A:898:G:H1'	0.404

Model ID	Atom-1	Atom-2	Clash overlap (Å)
1	A:370:A:H2'	A:12:A:C4	0.403
1	A:425:U:H4'	A:164:G:C8	0.403
1	A:952:U:H2'	A:337:C:C6	0.403
1	A:8:U:H4'	A:793:C:H6	0.403
1	A:580:G:H2'	A:827:A:H8	0.403
1	A:672:A:O2'	A:370:A:H8	0.402
1	A:780:A:H2'	A:448:A:N1	0.402
1	A:653:U:O2'	A:836:C:H5'	0.402
1	A:134:G:O2'	A:809:U:H6	0.402
1	A:64:G:C4'	A:346:G:C8	0.401
1	A:484:C:H2'	A:539:U:H5'	0.401
1	A:508:U:O2'	A:604:A:H8	0.401
1	A:547:U:H2'	A:841:A:H5''	0.401
1	A:897:A:N7	A:499:C:H5'	0.401
1	A:972:G:H5''	A:725:A:C8	0.400

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	250	246	3	1

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	Analysed	Favored	Allowed	Outliers
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Model ID	Analyzed	Favored	Allowed	Outliers
1	216	194	14	8

Detailed list of outliers are tabulated below.

Model ID	Chain	Residue ID	Residue type
1	B	1	GLN
1	B	5	ASN
1	B	21	LYS
1	B	65	LEU
1	B	75	ASP
1	B	139	LYS
1	B	189	LYS
1	B	215	ASN

Fit of model to data used for modeling ?

3DEM volume

Validation for this section is under development.

Mutagenesis

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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