

Integrative Structure Validation Report

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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	9A13 pdb_00009a13
PDB-Dev ID	PDBDEV_00000075
Structure Title	Model of the vaccinia virus DNA polymerase: complex between A20-Cter and E9
Structure Authors	Bersch B; Tarbouriech N; Burmeister WP; Iseni F
Deposited on	2021-02-16

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

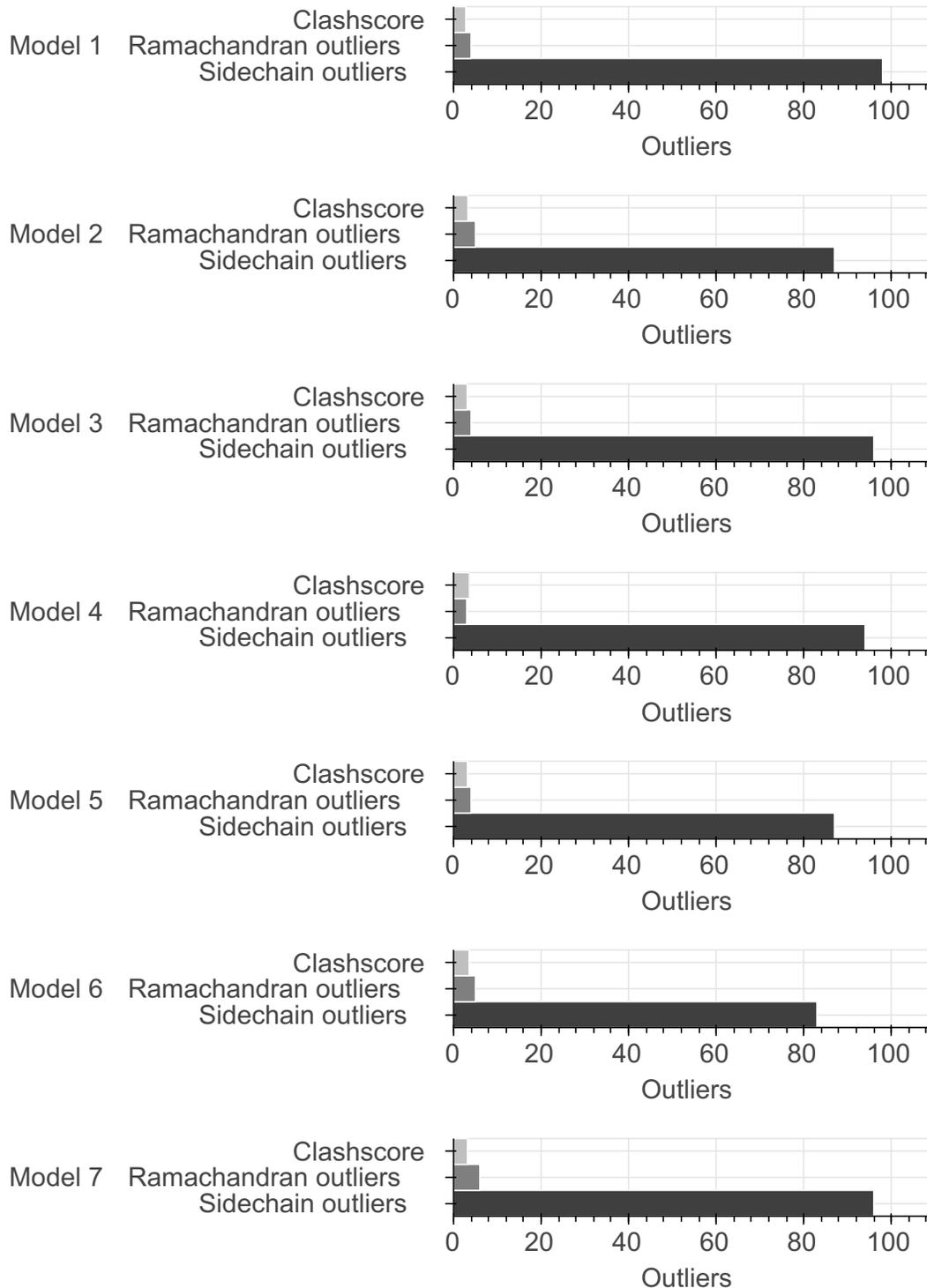
This entry consists of 10 model(s). A total of 5 dataset(s) were used to build this entry.

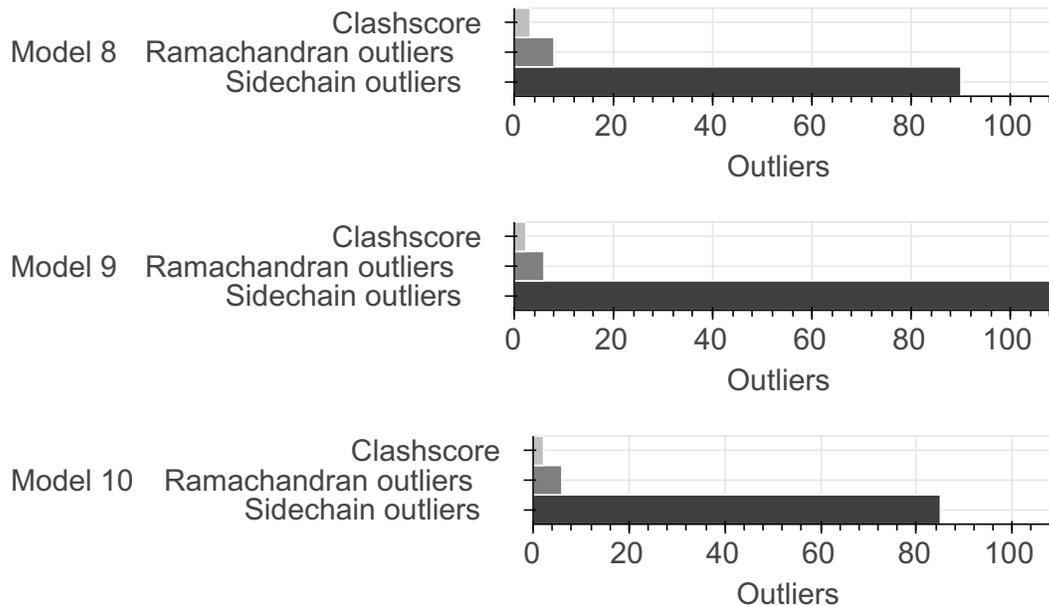
Name	Type	Count
NMR data	Experimental data	2
Other	Experimental data	1
Experimental model	Starting model	2

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	DNA polymerase processivity factor component A20	A	124	-	1-124	100.00 / 100.00	Atomic
		2	DNA polymerase	B	1010	-	1-1010	100.00 / 100.00	Atomic

2.3. Datasets used for modeling ?

There are 5 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	Experimental model	PDB	pdb_00006zxp
2	Experimental model	PDB	pdb_00005n2e
3	NMR data	BMRB	34544
4	NMR data	BMRB	34545
5	Other	Not available	10.1016/j.jmb.2021.167009

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	Docking	Not available	Not available	False	False

There is 1 software package reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	HADDOCK	Not available	model building	http://haddock.science.uu.nl/services/HADDOCK/

3. Data quality ?

3.4. NMR ?

Validation for this section is under development.

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

Standard geometry: bond outliers ?

There are no bond length outliers.

Standard geometry: angle outliers ?

There are no bond angle outliers.

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	2.79	51
2	3.28	60
3	3.12	57
4	3.61	66
5	3.17	58
6	3.56	65

Model ID	Clash score	Number of clashes
7	3.17	58
8	3.23	59
9	2.35	43
10	2.19	40

There are 557 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)
B:369:VAL:HG13	B:370:ARG:H	0.76	8	3
B:369:VAL:HG13	B:371:GLU:H	0.74	7	6
B:214:GLU:HA	B:217:ILE:HD12	0.71	10	1
A:70:VAL:HG11	B:582:LEU:H	0.69	7	1
A:70:VAL:HG12	B:581:ARG:HB3	0.69	7	1
B:171:ILE:HG22	B:190:THR:HG22	0.65	2	2
B:876:LEU:HD21	B:980:THR:HG22	0.65	7	1
B:837:ARG:CZ	B:837:ARG:HA	0.65	1	5
B:128:CYS:SG	B:159:ARG:HA	0.64	8	4
B:904:TYR:HH	B:908:ASP:N	0.63	4	2
B:502:ALA:HA	B:505:VAL:HG22	0.63	7	8
B:390:ALA:HB1	B:414:ILE:HG23	0.62	5	5
B:220:ALA:HB2	B:453:LEU:HD11	0.60	5	2
B:724:ASN:HB3	B:727:TYR:O	0.59	7	5
B:182:VAL:HG11	B:278:ASN:HB3	0.59	2	3
B:685:TYR:CZ	B:689:LYS:HD2	0.59	5	7
B:711:LEU:O	B:746:ARG:HA	0.58	6	6
B:269:HIS:HA	B:273:LEU:HD12	0.58	1	1
B:580:ASN:OD1	B:582:LEU:HB3	0.58	7	2
B:125:PRO:HB2	B:487:ALA:HB1	0.57	6	2
B:309:SER:HA	B:318:ALA:N	0.57	3	2
A:77:ILE:HD12	B:586:ILE:HG12	0.57	1	3
A:114:VAL:O	A:118:VAL:HG23	0.57	8	1
B:80:LEU:HD22	B:590:LEU:HB3	0.57	3	1
B:165:SER:O	B:261:ASP:HB2	0.57	8	4
A:6:PHE:O	A:12:ALA:HA	0.57	9	1
B:892:GLU:HA	B:895:MET:SD	0.56	6	5
B:836:ARG:HA	B:836:ARG:NE	0.56	8	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
B:587:ASN:O	B:591:LEU:HG	0.56	5	4
B:900:HIS:ND1	B:928:LEU:HA	0.56	4	2
B:774:ILE:O	B:778:LEU:HG	0.56	3	1
B:27:ARG:NH2	B:164:ARG:HA	0.55	3	3
B:909:ASN:N	B:910:PRO:HD2	0.55	5	8
B:221:VAL:HA	B:225:CYS:O	0.55	2	6
A:50:SER:OG	A:53:ASP:HB2	0.55	6	1
A:42:VAL:O	A:46:ILE:HG12	0.54	2	8
B:72:ILE:HD13	B:521:LEU:HB3	0.54	3	2
B:409:VAL:HG11	B:412:LYS:HD3	0.54	10	2
A:63:GLU:O	A:67:ILE:HG13	0.54	5	5
B:359:SER:O	B:385:LYS:HE3	0.54	9	1
A:8:LYS:O	A:9:VAL:HG22	0.53	4	1
B:541:LYS:HB2	B:752:VAL:HG13	0.53	7	1
B:453:LEU:O	B:457:LEU:HG	0.53	9	1
B:627:ILE:HB	B:628:PRO:HD3	0.53	5	10
B:171:ILE:HG22	B:190:THR:HG23	0.53	10	2
B:71:ASP:HA	B:522:VAL:O	0.53	6	1
B:409:VAL:HG13	B:421:VAL:HG21	0.53	7	1
B:843:HIS:CE1	B:979:LEU:HA	0.53	2	3
B:126:ASP:HB3	B:487:ALA:HB3	0.53	6	1
B:25:LYS:NZ	B:261:ASP:HA	0.53	4	2
B:112:LEU:HD13	B:492:LEU:HD21	0.53	9	1
B:837:ARG:HA	B:837:ARG:NH1	0.52	1	1
B:468:CYS:O	B:471:GLN:HG2	0.52	3	4
B:559:PRO:HA	B:631:LEU:HD13	0.52	5	1
B:582:LEU:O	B:586:ILE:HG13	0.52	6	1
B:444:LEU:HD22	B:459:MET:HE3	0.52	6	1
B:490:TYR:CG	B:505:VAL:HB	0.52	1	1
B:264:VAL:HA	B:333:PHE:O	0.52	5	5
B:443:ASP:O	B:447:MET:HB2	0.52	7	2
B:482:LYS:HE2	B:662:TYR:CD2	0.52	10	3
B:581:ARG:HD3	B:584:GLU:OE1	0.52	3	1
B:12:TRP:CE2	B:24:LEU:HD13	0.52	8	3
B:586:ILE:O	B:590:LEU:HB2	0.52	6	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
B:6:ASP:O	B:28:CYS:HA	0.51	9	1
B:834:GLU:HA	B:838:ASP:HB3	0.51	9	1
B:404:ASP:OD2	B:835:THR:HB	0.51	1	1
B:939:PRO:HB2	B:941:ASN:OD1	0.51	3	1
A:17:LEU:HD21	A:111:ILE:HG23	0.51	4	1
B:274:ARG:NH2	B:303:ILE:HB	0.51	3	1
B:556:SER:O	B:560:ASN:HB2	0.51	4	2
B:631:LEU:HD21	B:671:VAL:HG21	0.51	4	1
B:368:GLY:O	B:369:VAL:HG12	0.50	5	5
B:336:TYR:O	B:340:GLN:HB2	0.50	3	1
B:11:ASN:HB3	B:25:LYS:HB3	0.50	4	5
A:72:ASN:HB2	A:92:CYS:SG	0.50	10	2
B:858:LEU:HA	B:863:MET:SD	0.50	8	2
B:266:PHE:O	B:267:ASN:HB3	0.50	5	2
B:254:GLN:O	B:258:LEU:HG	0.50	1	4
B:876:LEU:O	B:880:LEU:HG	0.50	10	3
B:852:THR:O	B:856:GLU:HG3	0.50	1	2
B:77:SER:O	B:576:VAL:HA	0.50	3	2
B:672:TYR:HA	B:675:MET:SD	0.50	5	1
B:791:PHE:C	B:792:LYS:HG2	0.49	2	2
B:724:ASN:HB2	B:729:ASP:OD2	0.49	3	1
B:866:ASN:O	B:870:ILE:HG12	0.49	2	1
B:869:CYS:SG	B:992:LEU:HD23	0.49	10	3
B:110:GLU:O	B:507:LYS:HD3	0.49	10	1
A:80:CYS:SG	B:590:LEU:HD21	0.49	9	1
B:402:ASP:HB3	B:405:ILE:HD13	0.49	2	1
B:349:LYS:HB3	B:351:ASP:OD1	0.49	3	2
B:837:ARG:HD3	B:895:MET:O	0.49	5	1
B:209:GLU:HG2	B:217:ILE:HD13	0.49	2	1
B:78:TYR:HA	B:577:VAL:O	0.49	6	3
A:62:PRO:O	A:66:PHE:HB2	0.49	10	2
B:121:ASN:ND2	B:149:PRO:HG2	0.49	8	2
B:579:THR:HG23	B:612:LEU:HD23	0.49	2	2
B:981:SER:O	B:985:ASN:HB2	0.48	4	1
B:59:PHE:HB2	B:98:PRO:HD3	0.48	2	1

Atom 1	Atom 2	Clash(Å)	Model ID (Worst)	Models (Total)
B:48:ASP:O	B:52:GLN:HG2	0.48	4	3
B:670:SER:O	B:674:LEU:HG	0.48	4	2

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	1115	1048	63	4
2	1115	1046	64	5
3	1115	1048	63	4
4	1115	1040	72	3
5	1115	1040	71	4
6	1115	1050	60	5
7	1115	1054	55	6
8	1115	1045	62	8
9	1115	1048	61	6
10	1115	1049	60	6

There are 19 unique backbone outliers. Detailed list of outliers are tabulated below.

Chain	Res	Type	Models (Total)
A	9	VAL	9
B	369	VAL	9
B	184	ILE	4
B	835	THR	4
B	949	VAL	4
B	834	GLU	3
A	7	SER	2
B	531	PRO	2
B	532	TYR	2
B	713	ASN	2
B	943	PRO	2
A	4	LYS	1
B	79	ASN	1
B	177	LYS	1
B	272	ASP	1
B	404	ASP	1

Chain	Res	Type	Models (Total)
B	500	TYR	1
B	789	ASN	1
B	887	ARG	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	1036	834	104	98
2	1036	838	111	87
3	1036	839	101	96
4	1036	843	99	94
5	1036	834	115	87
6	1036	838	115	83
7	1036	829	111	96
8	1036	826	120	90
9	1036	807	120	109
10	1036	831	120	85

There are 333 unique sidechain outliers. Detailed list of outliers are tabulated below. The output is limited to 100 rows.

Chain	Res	Type	Models (Total)
A	90	THR	10
B	15	SER	10
B	495	SER	10
B	526	THR	10
B	530	PHE	10
B	568	SER	10
B	169	LEU	9
B	244	SER	9
B	308	GLN	9
B	602	THR	9
B	740	SER	9
B	834	GLU	9
A	11	SER	8
A	41	THR	8
B	55	SER	8

Chain	Res	Type	Models (Total)
B	213	THR	8
B	481	THR	8
B	503	SER	8
B	953	THR	8
B	961	SER	8
A	32	LEU	7
B	219	GLU	7
B	259	THR	7
B	296	LYS	7
B	309	SER	7
B	407	CYS	7
B	504	THR	7
B	712	SER	7
B	821	SER	7
B	840	SER	7
B	925	THR	7
A	17	LEU	6
A	50	SER	6
B	281	GLU	6
B	284	THR	6
B	321	THR	6
B	361	MET	6
B	369	VAL	6
B	652	THR	6
B	816	SER	6
B	818	SER	6
B	832	THR	6
B	888	SER	6
B	16	HIS	5
B	73	ASP	5
B	91	ASP	5
B	190	THR	5
B	222	ASP	5
B	265	THR	5
B	310	SER	5

Chain	Res	Type	Models (Total)
B	377	ASP	5
B	614	SER	5
B	670	SER	5
B	704	SER	5
B	723	SER	5
B	739	THR	5
B	755	ASP	5
B	761	THR	5
B	833	SER	5
B	1004	LYS	5
A	8	LYS	4
A	28	THR	4
A	66	PHE	4
A	74	ARG	4
A	113	ASN	4
A	117	ASP	4
B	14	GLU	4
B	27	ARG	4
B	69	THR	4
B	104	GLN	4
B	137	THR	4
B	176	ASP	4
B	177	LYS	4
B	231	LEU	4
B	413	ASP	4
B	428	LEU	4
B	484	ASP	4
B	525	GLU	4
B	579	THR	4
B	637	GLU	4
B	651	SER	4
B	751	SER	4
B	756	THR	4
B	819	SER	4
B	855	SER	4

Chain	Res	Type	Models (Total)
B	862	ARG	4
B	873	LEU	4
B	945	THR	4
B	959	ASP	4
B	971	PHE	4
B	997	PHE	4
B	1003	SER	4
B	1006	THR	4
A	59	LEU	3
A	75	PHE	3
A	97	SER	3
A	119	LYS	3
B	26	SER	3
B	53	SER	3
B	71	ASP	3

5. Fit to Data Used for Modeling Assessment

5.4. NMR

Validation for this section is under development.

6. Fit to Data Used for Validation Assessment

Validation for this section is under development.

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