

**Table 18. Structural and phylogenetic characteristics of VACV-WR immunogenic antigens**

VAC-WR Number	Antigen Name	Protein size	Time of expression	Description	Function category	Epitopes	Restriction Element	Percent Homology with VAR-major	Percent Homology with MVA
008/211	C19L	112	-	ankyrin-like	-	C19L(29-38)	A*2601, A*2902	100(G3R)	≤50
						C19L(104-112)		55.6(B24R, B16L, B6R)	55.6 (MVA135R)
010/209	C10L	331	-	-	-	C10L(298-306)	A*0101, A*3002	88.9(D3L)	100 (MVA006L)
						C10L(297-305)		88.9(D3L)	100 (MVA006L)
013	C12L	126	-	interleukin-18-binding protein; host defense modulator	Virulence Factor	C12L(97-106)	A*0101, A*3002	80(D5L)	80 (MVA008L)
						C12L(93-102)	A*0301	100(D5L)	100 (MVA008L)
019	C9L	634	-	ankyrin-like	-	C9L(193-201)	A*1101	55.6(A10L, A24R, H5R, N3L, Q1L)	55.6 (MVA074R)
021	C7L	150	early	host-range; possible host defense modulator,	Virulence Factor	C7L(31-40)	A*0301	100(D8L)	100 (MVA018L)
						C7L(74-82)	A*0201 (Terajima et al., 2003)	100(D11L)	100 (MVA018L)
022	C6L	151	-	-	-	C6L(54-63)	A*2407	90 (D9L)	90 (MVA019L)
023	C5L	204	-	-	-	C5L(158-166)	A*1101, A*0301	55.6(I6R, A6L)	55.6 (MVA096R)
025	C3L	263	early	complement control protein, host defense modulator	Virulence Factor	C3L(120-128)	B*4001	77.8(D12L)	55.6 (MVA069R)
027	C1L	229	-	-	-	C1L(102-111)	B*0702	90 (D14L)	≤50
029	N2L	175	early	alpha-amanitin target	-	N2L(93-101)	A*0201	100(P2L)	100 (MVA021L)
043	F4L	319	early	ribonucleoside-diphosphate reductase	viral regulation	F4L(6-14)	B*0702	88.9(C8L)	100 (MVA032L)
050	-	348	-	-	-	VWR050(259-267)	A*2601, A*2902	100(C15L)	55.6 (MVA068L)
051	F12L	635	late	involved in plaque and EEV formation	-	F12L(404-413)	A*0201	100(C16L)	100 (MVA042L)
						F12L(286-295)	A*0201	100(C16L)	100 (MVA042L)
058	E2L	737	-	-	-	E2L(249-257)	A*0201	100(E2L)	100 (MVA049L)
065	E9L	1006	early	DNA polymerase	viral regulation	E9L(107-115)	A*0201	100(E9L)	100 (MVA156L)
068	O1L	666	-	-	-	O1L(247-255)	A*0201	100(Q1L)	55.6 (MVA075R)
						O1L(335-344)	B*0702	100(Q1L)	60 (MVA053R)
072	I3L	269	early	ssDNA-binding phosphoprotein subunit	viral regulation	I3L(116-124)	A*0301	100(K3L)	100 (MVA064L)
073	I4L	771	early	ribonucleotide reductase large subunit	viral regulation	I4L(720-128)	A*0201	100(K4L)	100 (MVA065L)
080	G2R	220	early	late transcription elongation factor	viral regulation	G2R(181-189)	B*3701	88.9(H3R)	100(MVA072R)
082	-	434	-	-	-	VWR082(18-26)	A*0201	100(H5R)	100 (MVA074R)
086	G8R	260	intermediate	late gene transcription	viral regulation	G8R(65-73)	A*0301	100(H8R)	100 (MVA078R)
098	J6R	1286	early	DNA-dependent RNA polymerase subunit	viral regulation	J6R(332-340)	A*0301	100(L6R)	100 (MVA090R)
						J6R(303-311)	B*0702	100(L6R)	100 (MVA090R)
106	D1R	844	early	large subunit of mRNA capping enzyme; transcription termination factor VTF	viral regulation	D1R(686-694)	B*0702	88.9(F1R)	100 (MVA098R)
						D1R(156-164)	A*2601, A*2902	100(F1R)	100 (MVA098R)
						D1R(152-161)	A*0301	100(F1R)	100 (MVA098R)
110	D5R	785	early	NTPase interacts with A20R; essential for DNA replication	viral regulation	D5R(670-678)	A*3303	100(F5R)	88.9 (MVA102R)
						D5R(663-672)	A*2402	100(F5R)	100 (MVA102R)
						D5R(349-357)	A*2402	100(F5R)	100 (MVA102R)
117	D12L	287	early	small subunit of mRNA capping enzyme; transcription termination factor VTF	viral regulation	D12L(11-19)	A*0101, A*3002	100(N2L)	100 (MVA109L)
125	A6L	372	-	-	-	A6L(172-180)	A*0201	100(A6L)	100 (MVA117L)
126	D3R	710	late	82kDa large subunit of early gene transcription factor VETF	viral regulation	D3R(342-350)	A*0201	100(A7L)	100 (MVA118L)
127	A8R	288	early	small subunit of transcription factor VITF-3 used for intermediate gene expression	viral regulation	A8R(79-88)	A*0301	100(A8R)	100 (MVA119R)
148	A26L	725	-	gene fragment, cowpox A-type inclusion protein	-	A26L(177-186)	A*0201	100(A28L)	≤50
154	A31R	124	-	-	-	A31R(86-94)	A*1101	88.9(A34R)	88.9 (MVA142R)
159	A36R	221	late	IEV transmembrane phosphoprotein interacts with A33R and used in actin tail formation	virion structure	A36R(1-9)	A*0201	88.9(A39R)	100 (MVA147R)
180	A55R	564	-	kelch-like	-	A55R(78-86)	A*0201	55.6(B26R)	55.6 (MVA129R)
188	B5R	173	late	ankyrin-like	-	B5R(154-163)	A*1101	≤50	100 (MVA174R)
190	B8R	272	early	soluble interferon-gamma receptor like; host defense modulator	Virulence Factor	B8R(139_147)	A*0101, A*2601, A*2902	100(B9R)	55.6 (MVA053R)
						B8R(153-162)	A*0101, A*2601, A*2902	80(B9R)	≤50
						B8R(110-118)	B*4001	88.9(B9R)	55.6 (MVA090R, MVA166R, MVA102R, MVA049L)
						B8R(262-271)	A*0101, A*2902	≤50	≤50
195	B14R	345	early	SPI-2/CrmA inhibits Fas-mediated apoptosis, IL-1 convertase, lipoxygenase pathway	Virulence Factor	B14R(74-83)	A*1101	80(B13R)	≤50