

Gene	Growth	Kinetics	Uniprot entry	Function keyword	Process/protein/gene family	Reference
RL1	D ^{a,b}	N/A	Q6SWD5	Unknown		
RL2	D ^{a,b}	E (Chambers et al., 1999)	N/A	Latency*		(Goodrum et al., 2002)
RL4	D ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999;Dunn et al., 2003)	N/A	Cell tropism/Cell type-specific replication*	May be involved in cell tropism epithelial cells	(Womack, 2011)
RL4	D ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999;Dunn et al., 2003)	N/A	Latency*		(Goodrum et al., 2002)
RL5A	N/A	E (Hutchinson et al., 1986)	F5HF23	Unknown	RL11 family [†]	
RL6	D ^{a,b}	L (Chambers et al., 1999); E/L (Hutchinson et al., 1986)	Q6SWD3	Latency*	RL11 family [†]	(Goodrum et al., 2002)
RL8A	N/A	N/A	F7V995	Unknown		
RL9A	N/A	N/A	F7V996	Unknown		
RL9	D ^{a,b}	L (Chambers et al., 1999)	N/A	Unknown		
RL10	D ^{a,b}	E/L (Chambers et al., 1999)	F5HI32	Virion protein	Envelope protein [†] Glycoprotein	(Apweiler et al., 2004;Mocarski Jr, 2007)
RL11	D ^{a,b}	L (Chambers et al., 1999)	Q6SWD1	Immunomodulation*	IgG Fc-binding capacity [†] Glycoprotein [†] RL11 family [†]	(Mocarski Jr, 2007)
RL12	D ^{a,b}	E/L (Chambers et al., 1999)	Q6SWD0	Virion protein*	Putative membrane glycoprotein [†] RL11 family [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
RL12	D ^{a,b}	E/L (Chambers et	Q6SWD0	Immunomodulation*	IgG Fc-binding	(Cortese et al.,

		al., 1999)			capacity [†] Putative membrane glycoprotein [†] RL11 family [†]	2012)
RL13/TRL14	D ^{a,b}	E/L (Chambers et al., 1999)	Q6SWC9	Cell tropism/Cell type-specific replication*	May be involved in cell tropism Glycoprotein RL11 family [†]	(Stanton et al., 2010)
RL13/TRL14	D ^{a,b}	E/L (Chambers et al., 1999)	Q6SWC9	Virion protein	Glycoprotein	(Apweiler et al., 2004; Stanton et al., 2010)
RL13/TRL14	D ^{a,b}	E/L (Chambers et al., 1999)	Q6SWC9	Immunomodulation*	IgG Fc-binding glycoprotein	(Cortese et al., 2012)
RL13/TRL14	D ^{a,b}	E/L (Chambers et al., 1999)	Q6SWC9	(DNA) Replication	RL13 repressed replication in multiple cell types Glycoprotein	(Stanton et al., 2010)
UL1	D ^b	E/L (Chambers et al., 1999)	Q6SWC8	Virion protein	Glycoprotein RL11 family [†]	(Apweiler et al., 2004)
UL1	D ^b	E/L (Chambers et al., 1999)	Q6SWC8	Cell tropism/Cell type-specific replication*	May be involved in cell tropism in epithelial cells Glycoprotein RL11 family [†]	(Shikhagaie et al., 2012)
UL1	D ^b	E/L (Chambers et al., 1999)	Q6SWC8	Assembly/Maturation/Egress*	Localized at the cytoplasmic site of virion assembly and secondary envelopment Glycoprotein	(Shikhagaie et al., 2012)
UL2	MGD ^a / D ^b	L (Chambers et al., 1999)	Q6SWC7	Unknown	Putative membrane protein [†]	
UL3	D ^{a,b}	L (Chambers et al., 1999)	A8T755	Unknown		

UL4	D ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999)	Q6SWC6	Virion protein	Glycoprotein [†] RL11 family [†]	(Chang et al., 1989;Apweiler et al., 2004)
UL4	D ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999)	Q6SWC6	Latency*	Glycoprotein [†] RL11 family [†]	(Goodrum et al., 2002)
UL5	D ^{a,b}	E (Chambers et al., 1999)	Q6SWC5	Virion protein	Virion membrane protein [†] RL11 family [†]	(Mocarski Jr, 2007)
UL5	D ^{a,b}	E (Chambers et al., 1999)	Q6SWC5	Latency*	Virion membrane protein [†] RL11 family [†]	(Goodrum et al., 2002)
UL6	D ^{a,b}	N/A	Q6SWC4	Unknown	Putative membrane glycoprotein [†] RL11 family [†]	
UL7	D ^{a,b}	L (Chambers et al., 1999)	Q6SWC3	Immunomodulation	Modulation chemo- and/or cytokines Mediation immune cell adhesion Glycoprotein RL11 family [†]	(Apweiler et al., 2004;Engel et al., 2011)
UL8	D ^{a,b}	N/A	Q6SWC2	Unknown	Putative membrane glycoprotein [†] RL11 family [†]	
UL9	EG ^a /D ^b	L (Chambers et al., 1999)	F5H9T4	Viral growth	Temperance in fibroblasts [†] Putative membrane glycoprotein [†] RL11 family [†]	(Mocarski Jr, 2007)
UL10	D ^{a,b}	N/A	Q6SWC0	Viral growth	Temperance in RPE [†] Putative membrane glycoprotein [†] RL11 family [†]	(Mocarski Jr, 2007)

UL11	MGD ^a / D ^b	E (Hitomi et al., 1997)	Q6SWB9	Immunomodulation	Modulation T-cell signaling/function Membrane glycoprotein [†] RL11 family [†]	(Gabaev et al., 2011)
UL12	MGD ^a / D ^b	N/A	A8T769	Unknown		
UL13	D ^{a,b}	E (Chambers et al., 1999); IE/L (Wang et al., 2013b)	Q6SWB8	Unknown	Putative secreted protein [†]	
UL14	MGD ^a / D ^b	L (Chambers et al., 1999)	Q6SWB7	Unknown	Putative membrane glycoprotein [†] UL14 family [†]	
UL15A	D ^b	N/A	F5HAE6	Unknown	Putative membrane protein [†]	
UL15	D ^a	L (Chambers et al., 1999)	N/A	Unknown		
UL16	D ^{a,b}	E (Kaye et al., 1992)	F5HG68	Immunomodulation	Modulation NK cell signaling/function Membrane glycoprotein [†]	(Cosman et al., 2001;Dunn et al., 2003;Odeberg et al., 2003;Mocarski Jr, 2007;Muller et al., 2010)
UL16	D ^{a,b}	E (Kaye et al., 1992)	F5HG68	Viral growth	Temperance in fibroblasts [†]	(Mocarski Jr, 2007)
UL17	D ^{a,b}	E (Chambers et al., 1999)	F5HHT4	Latency*		(Goodrum et al., 2002)

UL18	D ^{a,b}	L (Hassan-Walker et al., 1998; Chambers et al., 1999)	F5HFB4	Immunomodulation	MHC-I homologue Modulation NK cell signaling/function Putative membrane glycoprotein [†] UL18 family [†]	(Chapman et al., 1999; Vitale et al., 1999; Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007; Kim et al., 2008)
UL19	D ^{a,b}	N/A	F5HI68	Unknown		
UL20	MGD ^a / D ^b	E (Jelcic et al., 2011)	F5H9Z4	Immunomodulation*	Modulation T-cell signaling/function*	(Beck and Barrell, 1991; Mocarski Jr, 2007)
UL21	SGD ^a	L (Chambers et al., 1999)	P16759 (AD169)	Unknown		
UL21.5/UL2 1A	EG ^a /G D ^b	E (Fehr and Yu, 2010)	F5HH39	Modulation of host cell cycle/protein synthesis	Degradation of cyclin A (primate CMV)	(Apweiler et al., 2004; Caffarelli et al., 2013)
UL21.5/UL2 1A	EG ^a /G D ^b	E (Fehr and Yu, 2010)	F5HH39	Viral growth	Temperance in fibroblasts [†]	(Mocarski Jr, 2007)
UL21.5/UL2 1A	EG ^a /G D ^b	E (Fehr and Yu, 2010)	F5HH39	(DNA) replication	Facilitates DNA synthesis	(Mocarski Jr, 2007; Fehr and Yu, 2010; 2011)
UL21.5/UL2 1A	EG ^a /G D ^b	E/L (Boriskin and Butcher, 2001)	F5HF91	Immunomodulation	Modulation chemo- and/or cytokines	(Mocarski Jr, 2007)
UL22A	N/A	N/A	F5HF90	Immunomodulation*	Possible role on DCs Secreted glycoprotein [†]	(Raftery et al., 2009)
UL22A	N/A	N/A	F5HF90	Virion protein	Secreted glycoprotein [†]	(Apweiler et al., 2004; Mocarski Jr, 2007)
UL22	N/A	L (Andre et al., 1999)	N/A	Unknown		
UL23	EG ^a /D ^b	E/L (Adair et al., 2002)	F5HDM3	Viral growth	Temperance in fibroblasts [†] Tegument protein [†] US22 family [†]	(Mocarski Jr, 2007)

UL23	EG ^a /D ^b	E/L (Adair et al., 2002)	F5HDM3	Virion protein	Tegument protein [†] US22 family [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL24	D ^{a,b}	E/L (Adair et al., 2002)	F5H9N4	Virion protein	Tegument protein [†] US22 family [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL24	D ^{a,b}	E/L (Adair et al., 2002)	F5H9N4	Cell tropism/Cell type-specific replication	Involved in cell tropism in endothelial cells Tegument protein [†] US22 family [†]	(Dunn et al., 2003; Mocarski Jr, 2007)
UL25	D ^{a,b}	L (Baldick and Shenk, 1996; Battista et al., 1999)	F5HGJ4	Virion protein	Tegument phosphoprotein [†] UL25 family [†]	(Baldick and Shenk, 1996; Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL26	SGD ^a /GD ^b	E (Chambers et al., 1999); IE/E (Stamminger et al., 2002)	F5HGG3	Virion protein	Tegument protein [†] US22 family [†]	(Baldick and Shenk, 1996; Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL26	SGD ^a /GD ^b	E (Chambers et al., 1999); IE/E (Stamminger et al., 2002)	F5HGG3	Gene expression/regulation	Activator of MIEP [†] Tegument protein [†] US22 family [†]	(Baldick and Shenk, 1996; Dunn et al., 2003; Mocarski Jr, 2007)
UL26	SGD ^a /GD ^b	E (Chambers et al., 1999); IE/E (Stamminger et al., 2002)	F5HGG3	Virion stability		(Kalejta, 2008)
UL27	D ^a /GD ^b	E (Chambers et al., 1999)	Q6SWA4	Unknown	Maribavir resistance [†]	

UL28	SGD ^a / GD ^b	E (Mitchell et al., 2009)	P16847	Gene expression/regulation	Activator of MIEP (via NuRD complex) US22 family [†]	(Mitchell et al., 2009;Terhune et al., 2010)
UL28	SGD ^a / GD ^b	E (Mitchell et al., 2009)	P16847	Apoptosis	Regulation of p53 US22 family [†]	(Savaryn et al., 2013)
UL28	SGD ^a / GD ^b	E (Mitchell et al., 2009)	P16847	Latency*	US22 family [†]	(Rossetto et al., 2013)
UL29	MGD ^a / GD ^b	L (Chambers et al., 1999); E (Mitchell et al., 2009)	Q6SWA3	Virion protein*	US22 family [†]	(Apweiler et al., 2004)
UL29	MGD ^a / GD ^b	L (Chambers et al., 1999); E (Mitchell et al., 2009)	Q6SWA3	Gene expression/regulation	Activator of MIEP (via NuRD complex) US22 family [†]	(Mitchell et al., 2009;Terhune et al., 2010)
UL29	MGD ^a / GD ^b	L (Chambers et al., 1999); E (Mitchell et al., 2009)	Q6SWA3	Apoptosis	Regulation of p53 US22 family [†]	(Savaryn et al., 2013)
UL29	MGD ^a / GD ^b	L (Chambers et al., 1999); E (Mitchell et al., 2009)	Q6SWA3	Cell tropism/Cell type-specific replication	Involved in cell tropism in endothelial cells [†] US22 family [†]	(Mocarski Jr, 2007;Savaryn et al., 2013)
UL30	SGD ^a / GD ^b	L (Ma et al., 2014)	F5HGC2	Latency*		(Goodrum et al., 2002)
UL31	MGD ^a / D ^b	L (Chambers et al., 1999; Ma et al., 2014)	Q6SWA0	Gene expression/regulation	Phosphoprotein	(Chang and Roizman, 1993;Dunn et al., 2003)
UL32 (pp150)	E ^{a,b}	L (Mocarski Jr, 1996;Chambers et al., 1999)	Q6SW99	Virion protein	Major tegument protein [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Kalejta, 2008)

UL32 (pp150)	E ^{a,b}	L (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW99	Cellular trafficking	Transport capsid to nucleus post entry Major tegument protein [†]	(Mocarski Jr, 2007; Kalejta, 2008)
UL32 (pp150)	E ^{a,b}	L (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW99	Assembly/Maturation/Egress	Final envelopment/egress Major tegument protein [†]	(AuCoin et al., 2006)
UL32 (pp150)	E ^{a,b}	L (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW99	Gene expression/regulation	Regulator of IE gene expression Major tegument protein [†]	(Bogdanow et al., 2013)
UL32 (pp150)	E ^{a,b}	L (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW99	Modulation of host cell cycle/protein synthesis	Sensor of the host cell cycle and differentiation state Major tegument protein [†]	(Bogdanow et al., 2013)
UL32 (pp150)	E ^{a,b}	L (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW99	Latency*	Major tegument protein [†]	(Goodrum et al., 2002)
UL33 (UL33.1 & UL33.2)	D ^{a,b}	E (Chambers et al., 1999); L (Mocarski Jr, 1996; Tadagaki et al., 2012)	Q6SW98	Immunomodulation	Modulation of chemo- and/or cytokine receptor through binding (CCR5/CXCR4) Envelope protein [†] GPCR-7TM family [†]	(Apweiler et al., 2004; Tadagaki et al., 2012)
UL33 (UL33.1 & UL33.2)	D ^{a,b}	E (Chambers et al., 1999); L (Mocarski Jr, 1996; Tadagaki et al., 2012)	Q6SW98	Virion protein	Envelope protein [†] GPCR-7TM family [†]	(Mocarski Jr, 2007)

UL33 (UL33.1 & UL33.2)	D ^{a,b}	E (Chambers et al., 1999); L (Mocarski Jr, 1996; Tadagaki et al., 2012)	Q6SW98	Modulation of host cell cycle/protein synthesis	Envelope protein [†] GPCR-7TM family [†]	(Mocarski Jr, 2007)
UL34	E ^{a,b}	E/L (Chambers et al., 1999); E and L (2 proteins) (Biegelke et al., 2004)	F5HC16	Gene expression/regulation	US3 regulator (repressor) [†]	(Mocarski Jr, 2007)
UL35	MGD ^a / D ^b	E (Chambers et al., 1999); E and L (2 proteins)(Liu and Biegelke, 2002)	F5HE12	Gene expression/regulation*	Possible regulator of IE gene expression Tegument phosphoprotein [†] UL25 family [†]	(Dunn et al., 2003;Mocarski Jr, 2007;Kalejta, 2008)
UL35	MGD ^a / D ^b	E (Chambers et al., 1999); E and L (2 proteins)(Liu and Biegelke, 2002)	F5HE12	(DNA) Replication	Tegument phosphoprotein [†] UL25 family [†]	(Mocarski Jr, 2007)
UL35	MGD ^a / D ^b	E (Chambers et al., 1999); E and L (2 proteins)(Liu and Biegelke, 2002)	F5HE12	Nucleotide repair/modification	DNA damage response Tegument phosphoprotein [†] UL25 family [†]	(Salsman et al., 2012)
UL35	MGD ^a / D ^b	E (Chambers et al., 1999); E and L (2 proteins)(Liu and Biegelke, 2002)	F5HE12	Assembly/Maturation/Egress	Tegument assembly/viral egress Tegument phosphoprotein [†] UL25 family [†]	(Kalejta, 2008)

UL35	MGD ^a / D ^b	E (Chambers et al., 1999); E and L (2 proteins)(Liu and Biegelke, 2002)	F5HE12	Virion protein	Tegument phosphoprotein [†] UL25 family [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL36	D ^{a,b}	E (Chambers et al., 1999); IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HAY6	Apoptosis	Inhibitor of caspase-8 [†] IE tegument protein [†] US22 family [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;McCormick et al., 2010)
UL36	D ^{a,b}	E (Chambers et al., 1999); IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HAY6	(DNA) Replication	Initiation replication IE tegument protein [†] US22 family [†]	(Smith and Pari, 1995a)
UL36	D ^{a,b}	E (Chambers et al., 1999); IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HAY6	Gene expression/regulation	Alters cellular and viral gene expression IE tegument protein [†] US22 family [†]	(Colberg-Poley et al., 1992)
UL36	D ^{a,b}	E (Chambers et al., 1999); IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)		Virion protein	IE tegument protein [†] US22 family [†]	(Mocarski Jr, 2007)
UL37	D ^b	IE (Uniprot)	Q6SW94	Latency*		(Rossetto et al., 2013)
UL37.1	E ^a	IE (Mocarski Jr, 1996)	N/A	(DNA) Replication	Initiation replication	(Colberg-Poley et al., 1992;Smith and Pari, 1995a)

UL37.1	E ^a	IE (Mocarski Jr, 1996)	N/A	Apoptosis	vMIA [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL37.1	E ^a	IE (Mocarski Jr, 1996)	N/A	Gene expression/regulation	US3 regulator	(Biegelke, 1999)
UL37.3	D ^a	IE (Mocarski Jr, 1996)	Q6SW94	(DNA) Replication	Initiation replication Glycoprotein [†]	(Colberg-Poley et al., 1992)
UL37.3	D ^a	IE (Mocarski Jr, 1996)	Q6SW94	Immunomodulation	MHC-I homologue Glycoprotein [†]	(Wyrwicz and Rychlewski, 2008)
UL37.3	D ^a	IE (Mocarski Jr, 1996)	Q6SW94	Viral growth	Glycoprotein [†]	(Hayajneh et al., 2001)
UL38	MGD ^a / GD ^b	IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HG98	Latency*	Glycoprotein [†]	(Goodrum et al., 2002;Rossetto et al., 2013)
UL38	MGD ^a / GD ^b	IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HG98	Apoptosis	Inhibitor of apoptosis Glycoprotein [†]	(Terhune et al., 2007;Moorman et al., 2008;Xuan et al., 2009;Qian et al., 2011)
UL38	MGD ^a / GD ^b	IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HG98	Virion protein	Glycoprotein [†]	(Mocarski Jr, 2007)
UL38	MGD ^a / GD ^b	IE (Colberg-Poley et al., 1992;Mocarski Jr, 1996)	F5HG98	Gene expression/regulation	US3 regulator (repressor) Glycoprotein [†]	(Biegelke, 1999)
UL39	D ^a	N/A	P16813 (AD169)	Cell tropism/Cell type-specific replication*	May be involved in cell tropism epithelial cells	(Womack, 2011)
UL39	D ^a	N/A	P16813 (AD169)	Latency*		(Goodrum et al., 2002)

UL40	D ^b	E/L (Chambers et al., 1999)	Q6SW92	Immunomodulation	Modulation NK cell signaling/function [†] Membrane glycoprotein [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
UL40	D ^b	E/L (Chambers et al., 1999)	Q6SW92	Latency*	Membrane glycoprotein [†]	(Goodrum et al., 2002)
UL41A	D ^b	N/A	F5HFG3	Virion protein	Membrane protein [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
UL42	D ^{a,b}	N/A	F5HHZ3	Unknown	Putative membrane protein [†]	
UL43	D ^{a,b}	L (Chambers et al., 1999;Adair et al., 2002)	Q6SW89	Virion protein	Tegument protein [†] US22 family [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL44	E ^{a,b}	E/L (Mocarski Jr, 1996;Chambers et al., 1999); E (Iwayama et al., 1994)		Modulation of host cell cycle/protein synthesis	P53 repression	(Kwon et al., 2012)
UL44	E ^{a,b}	E/L (Mocarski Jr, 1996;Chambers et al., 1999); E (Iwayama et al., 1994)	F5HC97	(DNA) Replication	DNA polymerase progressivity subunit [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL44	E ^{a,b}	E/L (Mocarski Jr, 1996;Chambers et al., 1999); E (Iwayama et al., 1994)	F5HC97	Latency*		(Goodrum et al., 2002;Rossetto et al., 2013)

UL45	D ^{a,b}	L (Patrone et al., 2003)	Q6SW87	(DNA) Replication	Ribonucleotide reductase homologue (enzymatically inactive) [†] Tegument protein [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL45	D ^{a,b}	L (Patrone et al., 2003)	Q6SW87	Viral growth	Influence on viral growth at low MOI Tegument protein [†]	(Mocarski Jr, 2007)
UL45	D ^{a,b}	L (Patrone et al., 2003)	Q6SW87	Virion Protein	Tegument protein [†]	(Mocarski Jr, 2007)
UL46	E ^{a,b}	E/L (Chambers et al., 1999)	F5HA93	Virion protein	Minor capsid protein [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL47	MGD ^a / GD ^b	E/L (Chambers et al., 1999); L (Hyun et al., 1999)	Q6SW85	Virion protein	Tegument protein [†]	(Mocarski Jr, 2007)
UL47	MGD ^a / GD ^b	E/L (Chambers et al., 1999); L (Hyun et al., 1999)	Q6SW85	Assembly/Maturation/Egress*	Tegument protein [†]	(Apweiler et al., 2004)
UL47	MGD ^a / GD ^b	E/L (Chambers et al., 1999); L (Hyun et al., 1999)	Q6SW85	Cellular Trafficking*	May be involved in release of vDNA post entry Tegument protein [†]	(Mocarski Jr, 2007)
UL48	E ^a /GD ^b	L (Chambers et al., 1999)	Q6SW84	Viral growth	DUB activity contributes to viral growth (largest) Tegument protein [†]	(Apweiler et al., 2004; Kim et al., 2009)

UL48	E ^a /GD ^b	L (Chambers et al., 1999)	Q6SW84	Cellular Trafficking*	Intracellular capsid transport ^{2†} (largest) Tegument protein [†]	(Mocarski Jr, 2007)
UL48	E ^a /GD ^b	L (Chambers et al., 1999)	Q6SW84	Virion protein	(largest) Tegument protein [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL48.5	E ^{a,b}	N/A	N/A	Virion protein	Located on tips of hexons of capsid [†]	(Baldick and Shenk, 1996;Dunn et al., 2003;Mocarski Jr, 2007)
UL48.5	E ^{a,b}	N/A	N/A	Cellular Trafficking*	Capsid transport ^{2†} Located on tips of hexons of capsid [†]	(Mocarski Jr, 2007)
UL49	E ^{a,b}	E/L (Chambers et al., 1999)	Q6SW82	(DNA) Replication	DNA synthesis	(Apweiler et al., 2004;Zhang et al., 2010;Wang et al., 2013a)
UL50	E ^{a,b}	E /delayed E (Buchkovich et al., 2010)	Q6SW81	Virion protein*	Inner nuclear membrane protein [†]	(Mocarski Jr, 2007)
UL50	E ^{a,b}	E /delayed E (Buchkovich et al., 2010)	Q6SW81	Latency*	Inner nuclear membrane protein [†]	(Rossetto et al., 2013)
UL50	E ^{a,b}	E /delayed E (Buchkovich et al., 2010)	Q6SW81	Assembly/Maturation/Egress	Nuclear egress Inner nuclear membrane protein [†]	(Dunn et al., 2003;Mocarski Jr, 2007;Sharma et al., 2014)
UL51	E ^{a,b}	L (Borst et al., 2013)	F5HGI9	Assembly/Maturation/Egress	DNA cleavage-packaging	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Borst et al., 2013)

UL52	E ^{a,b}	L (Chambers et al., 1999; Borst et al., 2008)	Q6SW79	Assembly/Maturation/Egress	DNA cleavage-packaging	(Dunn et al., 2003; Borst et al., 2008)
UL52	E ^{a,b}	L (Chambers et al., 1999; Borst et al., 2008)	Q6SW79	Latency*		(Rossetto et al., 2013)
UL52	E ^{a,b}	L (Chambers et al., 1999; Borst et al., 2008)	Q6SW79	Cellular Trafficking*	Capsid transport ^{††}	(Mocarski Jr, 2007)
UL53	E ^{a,b}	E (Chambers et al., 1999); L (Dal Monte et al., 2002)	F5HFZ4	Assembly/Maturation/Egress	Nuclear egress Nuclear matrix protein [†]	(Dunn et al., 2003; Mocarski Jr, 2007; Sharma et al., 2014)
UL54	E ^{a,b}	E (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW77	(DNA) Replication ^(SUL54-UL57)	DNA polymerase [†] Formation of replication compartment (UL54-UL57)	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL55	E ^{a,b}	E (Mocarski Jr, 1996; Smuda et al., 1997; Chambers et al., 1999)	F5HB53	Entry	Heparan binding [†] Virion glycoprotein(gB) [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007; Isaacson and Compton, 2009)
UL55	E ^{a,b}	E (Mocarski Jr, 1996; Smuda et al., 1997; Chambers et al., 1999)	F5HB53	Virion protein	Heparan binding [†] Virion glycoprotein(gB) [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007; Isaacson and Compton, 2009)

UL55	E ^{a,b}	E (Mocarski Jr, 1996;Smuda et al., 1997;Chambers et al., 1999)	F5HB53	(DNA) Replication ^(SUL54-UL57)	Formation of replication compartment (UL54-UL57)	(Xiaofei et al., 2012)
UL56	E ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999)	F5HC79	(DNA) Replication ^(SUL54-UL57)	Formation of replication compartment (UL54-UL57)	(Xiaofei et al., 2012)
UL56	E ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999)	F5HC79	Assembly/Maturation/Egress	Binds DNA packaging motif [†] DNA cleavage-packaging	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Champier et al., 2008;Borst et al., 2013)
UL56	E ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999)	F5HC79	Nucleotide repair/modification	Nuclease activity [†]	(Mocarski Jr, 2007;Champier et al., 2008;Borst et al., 2013)
UL57	E ^{a,b}	E (Mocarski Jr, 1996;Chambers et al., 1999)	F5HDQ6	(DNA) Replication ^(SUL54-UL57)	Formation of replication compartment (UL54-UL57) ssDNA-binding protein [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Woon et al., 2008;Xiaofei et al., 2012)
UL59	D ^a	L (Chambers et al., 1999)	A8T7D9	Unknown		
UL61	E ^b	E (Chambers et al., 1999)	P16818 (AD169)	Latency*		(Goodrum et al., 2002)
UL62	D ^a	N/A	P16819 (AD169)	Unknown		
UL64	D ^a	N/A	P16821 (AD169)	Latency*		(Goodrum et al., 2002)

UL65	MGD ^a / D ^b	L (Bergallo et al., 2008)	P17148 (AD169)	Latency*		(Goodrum et al., 2002)
UL67	D ^a	L (Chambers et al., 1999)	P16747 (AD169)	Latency*		(Goodrum et al., 2002; Cheung et al., 2006)
UL68	N/A	L ((Chambers et al., 1999)	P16748 (AD169)	Latency*		(Goodrum et al., 2002; Cheung et al., 2006)
UL69	SGD ^a / GD ^b	E/L (Winkler et al., 1994; Chambers et al., 1999)	Q6SW73	Gene expression/regulation	Binds mRNA cap-binding complex Tegument phosphoprotein	(Dunn et al., 2003; Apweiler et al., 2004; Kalejta, 2008; Kapasi and Spector, 2008; Aoyagi et al., 2010)
UL69	SGD ^a / GD ^b	E/L (Winkler et al., 1994; Chambers et al., 1999)	Q6SW73	Cellular Trafficking	mRNA export Tegument phosphoprotein	(Kalejta, 2008)
UL69	SGD ^a / GD ^b	E/L (Winkler et al., 1994; Chambers et al., 1999)	Q6SW73	Modulation of host cell cycle/protein synthesis	G1 arrest Tegument phosphoprotein	(Apweiler et al., 2004; Mocarski Jr, 2007; Kalejta, 2008)
UL69	SGD ^a / GD ^b	E/L (Winkler et al., 1994; Chambers et al., 1999)	Q6SW73	Virion protein	Tegument phosphoprotein	(Dunn et al., 2003; Mocarski Jr, 2007; Kalejta, 2008)
UL70	E ^{a,b}	N/A	F5HG51	(DNA) Replication	DNA helicase-primase [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007; Woon et al., 2008)
UL70	E ^{a,b}	N/A	F5HG51	Latency*		(Goodrum et al., 2002)

UL71	E ^a /GD ^b	E/L (Schauflinger et al.)	F5HEA3	Assembly/Maturation/Egress	Late envelopment Cytoplasmic egress [†] Tegument protein [†]	(Schauflinger et al., 2011; Meissner et al., 2012)
UL71	E ^a /GD ^b	E/L (Schauflinger et al.)	F5HEA3	Virion protein	Tegument protein [†]	(Apweiler et al., 2004; Mocarski Jr, 2007)
UL72	MGD ^a / GD ^b	E/L (Chambers et al., 1999)	Q6SW70	Virion protein		(Mocarski Jr, 2007)
UL72	MGD ^a / GD ^b	E/L (Chambers et al., 1999)	Q6SW70	Nucleotide repair/modification	Deoxyuridine triphosphatase homologue (not active) [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL73	E ^{a,b}	E/L (Chambers et al., 1999)	F5HHQ0	Entry	Virion glycoprotein (gN) [†]	(Dunn et al., 2003; Mocarski Jr, 2007)
UL73	E ^{a,b}	E/L (Chambers et al., 1999)	F5HHQ0	Virion Protein	Virion glycoprotein (gN) [†]	(Apweiler et al., 2004; Mocarski Jr, 2007)
UL73	E ^{a,b}	E/L (Chambers et al., 1999)	F5HHQ0	Latency*		(Goodrum et al., 2002)
UL74	MGD ^a / GD ^b	L (Huber and Compton, 1998)	F5HGPI	Viral spread	Cell-to-cell spread Virion glycoprotein (gO) [†]	(Kinzler and Compton, 2005)
UL74	MGD ^a / GD ^b	L (Huber and Compton, 1998)	F5HGPI	Assembly/Maturation/Egress	Secondary Envelopment Virion glycoprotein (gO) [†]	(Jiang et al., 2008)
UL74	MGD ^a / GD ^b	L (Huber and Compton, 1998)	F5HGPI	Entry	Virion glycoprotein (gO) [†]	(Mocarski Jr, 2007)

UL74	MGD ^a / GD ^b	L (Huber and Compton, 1998)	F5HGP1	Immunomodulation	Reduces the inhibitory effect of gH- and gB- specific antibodies Virion glycoprotein (gO) [†]	(Jiang et al., 2011)
UL74	MGD ^a / GD ^b	L (Huber and Compton, 1998)	F5HGP1	Virion protein	Virion glycoprotein (gO) [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
UL75	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW67	Virion protein	Virion glycoprotein (gH) [†]	(Mocarski Jr, 2007)
UL75	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW67	Entry	Virion glycoprotein (gH) [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
UL75	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW67	Latency*	Virion glycoprotein (gH) [†]	(Goodrum et al., 2002)
UL76	E ^a /GD ^b	L (Wang et al., 2004)	Q6SW66	Virion protein	Virion-associated regulatory protein [†]	(Mocarski Jr, 2007)
UL76	E ^a /GD ^b	L (Wang et al., 2004)	Q6SW66	Apoptosis	Inducer of DNA damage Virion-associated regulatory protein [†]	(Siew et al., 2009;Costa et al., 2013)
UL76	E ^a /GD ^b	L (Wang et al., 2004)	Q6SW66	Gene expression/regulation	Regulator of UL77 expression Virion-associated regulatory protein [†]	(Isomura et al., 2010)

UL76	E ^a /GD ^b	L (Wang et al., 2004)	Q6SW66	(DNA) Replication	Negative regulator of replication Virion-associated regulatory protein [†]	(Wang et al., 2004)
UL76	E ^a /GD ^b	L (Wang et al., 2004)	Q6SW66	Latency*	Virion-associated regulatory protein [†]	(Goodrum et al., 2002;Wang et al., 2004)
UL77	E ^{a,b}	E (Chambers et al., 1999)	Q6SW65	Assembly/Maturation/Egress	DNA packaging Portal capping protein [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Meissner et al., 2011)
UL78	D ^{a,b}	E (Chambers et al., 1999)	F5HET1	Immunomodulation	Modulation chemo- and/or cytokine receptors Chemokine receptor-like protein GPCR family [†]	(Beisser et al., 2002;Mocarski Jr, 2007;Tadagaki et al., 2012)
UL78	D ^{a,b}	E (Chambers et al., 1999)	F5HET1	Cell tropism/Cell type-specific replication	Involved in cell tropism epithelial cells Chemokine receptor-like protein GPCR family [†]	(O'Connor and Shenk, 2012)
UL79	E ^{a,b}	E (Isomura et al., 2011)	Q6SW63	Gene expression/regulation	Required for accumulation late transcripts	(Isomura et al., 2011;Perng et al., 2011)
UL79	E ^{a,b}	E (Isomura et al., 2011)	Q6SW63	Latency*		(Rossetto et al., 2013)
UL80	E ^{a,b}	L (Welch et al., 1991)	Q6SW62	Latency*	Protease and capsid assembly protein [†]	(Goodrum et al., 2002)
UL80	E ^{a,b}	L (Welch et al., 1991)	Q6SW62	Assembly/Maturation/Egress	Protease and capsid assembly protein [†]	(Dunn et al., 2003;Mocarski Jr, 2007)

UL80	E ^{a,b}	L (Welch et al., 1991)	Q6SW62	(DNA) Replication*	Involvement nuclear localization signals Protease and capsid assembly protein [†]	(Nguyen et al., 2008)
UL80.5	E ^b	N/A	F5HE40	Assembly/Maturation/Egress	Early capsid formation	(Loveland et al., 2007;Mocarski Jr, 2007)
UL81ast/LUNA	N/A	L (Keyes et al., 2012)	N/A	Latency	Established LAT	(Goodrum et al., 2002;Bego et al., 2005;Bego et al., 2011;Rossetto et al., 2013)
UL82/pp71	SGD ^a / GD ^b	L (Mocarski Jr, 1996;Chambers et al., 1999)	F5HBC6	Virion protein	Tegument phosphoprotein [†] UL82 family [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL82/pp71	SGD ^a / GD ^b	L (Mocarski Jr, 1996;Chambers et al., 1999)	F5HBC6	Gene expression/regulation	Activator of MIEP Tegument phosphoprotein [†] UL82 family [†]	(Dunn et al., 2003;Mocarski Jr, 2007;Penkert and Kalejta, 2012)
UL82/pp71	SGD ^a / GD ^b	L (Mocarski Jr, 1996;Chambers et al., 1999)	F5HBC6	Modulation of host cell cycle/protein synthesis	Interaction with Rb family Tegument phosphoprotein [†] UL82 family [†]	(Apweiler et al., 2004;Penkert and Kalejta, 2012)
UL82/pp71	SGD ^a / GD ^b	L (Mocarski Jr, 1996;Chambers et al., 1999)	F5HBC6	Immunomodulation	Granzyme M degradation Tegument phosphoprotein [†] UL82 family [†]	(Penkert and Kalejta, 2012)

UL82/pp71	SGD ^a / GD ^b	L (Mocarski Jr, 1996; Chambers et al., 1999)	F5HBC6	Latency*	Prevents DAXX degradation Tegument phosphoprotein [†] UL82 family [†]	(Penkert and Kalejta, 2012)
UL83/pp65	D ^{a,b}	L (Chambers et al., 1999); E/L (Mocarski Jr, 1996)	Q6SW59	Cell tropism/Cell type-specific replication*	May be involved in cell tropism epithelial cells	(Womack, 2011)
UL83/pp65	D ^{a,b}	L (Chambers et al., 1999); E/L (Mocarski Jr, 1996)	Q6SW59	Virion protein	Major Tegument phosphoprotein [†] UL82 family [†]	(Dunn et al., 2003; Mocarski Jr, 2007)
UL83/pp65	D ^{a,b}	L (Chambers et al., 1999); E/L (Mocarski Jr, 1996)	Q6SW59	Gene expression/regulation	Activator of MIEP Major Tegument phosphoprotein [†] UL82 family [†]	(Cristea et al., 2010; Arcangeletti et al., 2011)
UL83/pp65	D ^{a,b}	L (Chambers et al., 1999); E/L (Mocarski Jr, 1996)	Q6SW59	Immunomodulation	Suppression IFN response Major Tegument phosphoprotein [†] UL82 family [†]	(Apweiler et al., 2004; Mocarski Jr, 2007)
UL84	E ^{a,b}	E/L (Mocarski Jr, 1996; Chambers et al., 1999)	F5HB40	(DNA) Replication	Required for oriLyt-dependent DNA replication(through protein-protein interaction)	(Dunn et al., 2003; Colletti et al., 2007; Mocarski Jr, 2007; Woon et al., 2008; Gao and Pari, 2009; Kagele et al., 2009; Strang et al., 2012)

UL84	E ^{a,b}	E/L (Mocarski Jr, 1996;Chambers et al., 1999)	F5HB40	Viral Growth	Nucleoplasmic shuttling essential for viral growth	(Gao et al., 2010)
UL84	E ^{a,b}	E/L (Mocarski Jr, 1996;Chambers et al., 1999)	F5HB40	Latency*		(Goodrum et al., 2002;Rossetto et al., 2013)
UL85	E ^{a,b}	E/L (Chambers et al., 1999)	F5HIN9	Assembly/Maturation/Egress	Minor capsid protein [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL86	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	F5HGT1	Assembly/Maturation/Egress	Major capsid protein [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL87	E ^{a,b}	E (Isomura et al., 2010)	Q6SW55	Gene expression/regulation	Required for accumulation late transcripts	(Isomura et al., 2011)
UL87	E ^{a,b}	E (Isomura et al., 2011)	Q6SW55	Latency*		(Goodrum et al., 2002;Rossetto et al., 2013)
UL88	MGD ^a / D ^b	N/A	F5H9F9	Virion protein	Tegument protein [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL88	MGD ^a / D ^b	N/A	F5H9F9	Assembly/Maturation/Egress*	Cytoplasmic egress [†] Tegument protein [†]	(Mocarski Jr, 2007)
UL89	E ^{a,b}	E/L (Chambers et al., 1999)	F5HCU8	Viral growth	shRNA against UL89 inhibits of formation of replicative infectious particles	(Thoma and Bogner, 2010)
UL89.1	E ^{a,b}	N/A	F5HCU8	Assembly/Maturation/Egress	Terminase ATPase subunit [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)

UL89.2	D ^a	N/A	F5HCU8	Assembly/Maturation/Egress	Terminase ATPase subunit [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL90	E ^a	N/A	P16796	Unknown		
UL91	E ^{a,b}	L (Chambers et al., 1999)	F5HFJ8	Gene expression/regulation	Essential for transcription of viral true late (γ 2) genes	(Omoto and Mocarski, 2013)
UL92	E ^{a,b}	L (Chambers et al., 1999)	F5HAS7	Gene expression/regulation	Essential for transcription of viral true late (γ 2) genes	(Omoto and Mocarski, 2014)
UL93	E ^{a,b}	L (Chambers et al., 1999)	Q6SW50	Assembly/Maturation/Egress*	Possible role in DNA packaging Tegument protein [†]	(Apweiler et al., 2004)
UL93	E ^{a,b}	L (Chambers et al., 1999)	Q6SW50	Virion protein	Tegument protein [†]	(Mocarski Jr, 2007)
UL93	E ^{a,b}	L (Chambers et al., 1999)	Q6SW50	Cellular trafficking*	Capsid transport ^{?†} Tegument protein [†]	(Mocarski Jr, 2007)
UL94	E ^a /GD ^b	L (Wing et al., 1996; Chambers et al., 1999)	F5HAC7	Virion protein	Tegument protein [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007; Phillips et al., 2012)
UL94	E ^a /GD ^b	L (Wing et al., 1996; Chambers et al., 1999)	F5HAC7	Assembly/Maturation/Egress	Secondary envelopment Cytoplasmic egress ^{?†} Tegument protein [†]	(Mocarski Jr, 2007; Phillips and Bresnahan, 2012)
UL95	E ^{a,b}	E/L (Wing and Huang, 1995)	Q6SW48	Gene expression/regulation	Required for accumulation late transcripts	(Isomura et al., 2011)
UL95	E ^{a,b}	E/L (Wing and Huang, 1995)	Q6SW48	Assembly/Maturation/Egress*	Encapsidation chaperone protein ^{?†}	(Mocarski Jr, 2007)
UL95	E ^{a,b}	E/L (Wing and Huang, 1995)	Q6SW48	Latency*		(Rossetto et al., 2013)

UL96	E ^a /GD ^b	E/L (Chambers et al., 1999)	F5H8R6	Virion protein	Tegument protein [†]	(Apweiler et al., 2004;Mocarski Jr, 2007;Tandon and Mocarski, 2011)
UL96	E ^a /GD ^b	E/L (Chambers et al., 1999)	F5H8R6	Assembly/Maturation/Egress	Stabilizes pp150-associated nucleocapsids Tegument protein [†]	(Tandon and Mocarski, 2011)
UL97	MGD ^a /GD ^b	E/L (Chambers et al., 1999)	Q6SW46	Modulation of host cell cycle/protein synthesis	Mimics cdc2/CDK1 [†] Tegument protein [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
UL97	MGD ^a /GD ^b	E/L (Chambers et al., 1999)	Q6SW46	Gene expression/regulation	Regulator of MIEP Tegument protein [†]	(Bigley et al., 2013)
UL97	MGD ^a /GD ^b	E/L (Chambers et al., 1999)	Q6SW46	Virion protein	Tegument protein [†]	(Mocarski Jr, 2007)
UL97	MGD ^a /GD ^b	E/L (Chambers et al., 1999)	Q6SW46	(DNA) Replication	Tegument protein [†]	(Mocarski Jr, 2007)
UL97	MGD ^a /GD ^b	E/L (Chambers et al., 1999)	Q6SW46	Assembly/Maturation/Egress	DNA packaging Nuclear egress Tegument protein [†]	(Mocarski Jr, 2007)
UL98	E ^{a,b}	E/L (Chambers et al., 1999)	F5HF49	Nucleotide repair/modification	Deoxyribonuclease [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL98	E ^{a,b}	E/L (Chambers et al., 1999)	F5HF49	Latency*		(Goodrum et al., 2002)
UL99/pp28	E ^{a,b}	L (Mocarski Jr, 1996)	F5HI87	Virion protein	Myristylated tegument protein [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL99/pp28	E ^{a,b}	L (Mocarski Jr, 1996)	F5HI87	Latency*	Myristylated tegument protein [†]	(Goodrum et al., 2002)

UL99/pp28	E ^{a,b}	L (Mocarski Jr, 1996)	F5HI87	Assembly/Maturation/Egress	Secondary envelopment Cytoplasmic egress [†] Myristylated tegument protein [†]	(Silva et al., 2003;Mocarski Jr, 2007)
UL99/pp28	E ^{a,b}	L (Mocarski Jr, 1996)	F5HI87	(DNA) Replication	Interaction with UL94 essential for replication	(Phillips et al., 2012)
UL100	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW43	Entry	Virion glycoprotein (gM) [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL100	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW43	Assembly/Maturation/Egress	gM trafficking in virion assembly Virion glycoprotein (gM) [†]	(Krzyzaniak et al., 2007)
UL100	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW43	(DNA) Replication	Deletion of cytoplasmic tail leads to replication defective virus Virion glycoprotein (gM) [†]	(Krzyzaniak et al., 2007)
UL100	E ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW43	Virion protein	Virion glycoprotein (gM) [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
UL102	E ^{a,b}	L (Chambers et al., 1999); IE/E (Smith and Pari, 1995b)	F5HIG1	(DNA) Replication	Component of DNA helicase-primase [†]	(Smith and Pari, 1995b;Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL103	MGD ^a / GD ^b	L (Chambers et al., 1999)	F5HA10	Virion protein	Tegument protein [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
UL103	MGD ^a / GD ^b	L (Chambers et al., 1999)	F5HA10	Assembly/Maturation/Egress	Regulates particle egress	(Mocarski Jr, 2007;Ahlqvist and Mocarski, 2011)

UL104	E ^{a,b}	E (Chambers et al., 1999)	F5HBR4	Assembly/Maturation/Egress	DNA encapsidation [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL105	E ^{a,b}	L (Chambers et al., 1999)	F5HEN8	(DNA) Replication	Component of DNA helicase-primase [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL105	E ^{a,b}	L (Chambers et al., 1999)	F5HEN8	Latency*		(Goodrum et al., 2002)
UL108	MGD ^a	L (Chambers et al., 1999)	P16829 (AD169)	Latency*		(Goodrum et al., 2002;Cheung et al., 2006)
UL109	D ^a	L (Chambers et al., 1999)	P16738 (AD169)	Cell tropism/cell type-specific replication*	May be involved in cell tropism epithelial cells	(Womack, 2011)
UL110	D ^a	IE/E/L (Chambers et al., 1999)	P16830 (AD169)	Cell tropism/cell type-specific replication*	May be involved in cell tropism epithelial cells	(Womack, 2011)
UL110	D ^a	IE/E/L (Chambers et al., 1999)	P16830 (AD169)	Latency*		(Goodrum et al., 2002;Cheung et al., 2006)
UL111A	D ^a	E/L (Chambers et al., 1999); L (Chang et al., 2004)	F5HC71	Cell tropism/cell type-specific replication*	May be involved in cell tropism epithelial cells	(Womack, 2011)
UL111A	D ^a	E/L (Chambers et al., 1999); L (Chang et al., 2004)	F5HC71	Immunomodulation	vIL10	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Jenkins et al., 2008;Cheung et al., 2009;Avdic et al., 2011;Avdic et al., 2013)

UL111A	D ^a	E/L (Chambers et al., 1999); L (Chang et al., 2004)	F5HC71	Latency	Established LAT	(Cheung et al., 2006; Avdic et al., 2011; Rossetto et al., 2013)
UL112	SGD ^a / GD ^b	E (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW37	Gene expression/regulation	Transcriptional activator [†]	(Mocarski Jr, 2007)
UL112	SGD ^a / GD ^b	E (Mocarski Jr, 1996; Chambers et al., 1999)	Q6SW37	(DNA) Replication	Organisation of DNA replication [†]	(Kim and Ahn, 2010)
UL113	SGD ^a / GD ^b	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW37	Gene expression/regulation	Transcriptional activator [†]	(Mocarski Jr, 2007)
UL113	SGD ^a / GD ^b	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW37	(DNA) Replication	Promotes DNA replication	(Mocarski Jr, 2007; Kim and Ahn, 2010)
UL114	MGD ^a / GD ^b	E (Chambers et al., 1999)	F5HI85	Nucleotide repair/modification	Uracyl-DNA glycosylase [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
UL114	MGD ^a / GD ^b	E (Chambers et al., 1999)	F5HI85	(DNA) Replication	Increases efficiency of DNA replication Interaction with UL54 Temporal regulation of DNA replication [†]	(Prichard et al., 1996; Mocarski Jr, 2007; Ranneberg-Nilsen et al., 2008; Strang and Coen, 2010)
UL114	MGD ^a / GD ^b	E (Chambers et al., 1999)	F5HI85	Latency*		(Rossetto et al., 2013)
UL115	E ^{a,b}	L (Mocarski Jr, 1996)	F5HCH8	Virion protein	Virion glycoprotein (gL) [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)

UL115	E ^{a,b}	L (Mocarski Jr, 1996)	F5HCH8	Entry	Virion glycoprotein (gL) [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL115	E ^{a,b}	L (Mocarski Jr, 1996)	F5HCH8	Latency*		(Cheung et al., 2006)
UL116	D ^{a,b}	E/L (Chambers et al., 1999); L (Mocarski Jr, 1996)	Q6SW34	Unknown	Putative membrane glycoprotein [†]	
UL117	SGD ^a / GD ^b	L (Mocarski Jr, 1996)	F5HFA5	(DNA) replication	Involved in maturation of viral replication compartments	(Qian et al., 2008)
UL118	D ^b	E (Chambers et al., 1999); L (Mocarski Jr, 1996)	F5HC14	Immunomodulation ^(SUL118-UL119)	Viral Fc Gamma receptor	(Atalay et al., 2002;Apweiler et al., 2004)
UL119	D ^{a,b}	E (Chambers et al., 1999); L (Mocarski Jr, 1996)	F5HC14	Immunomodulation ^(SUL118-UL119)	Viral Fc Gamma receptor	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
UL120	D ^b	L (Chambers et al., 1999)	Q6SW31	Unknown	Putative membrane glycoprotein [†] UL120 family [†]	
UL121	D ^{a,b}	L (Chambers et al., 1999)	F5HD27	Unknown	Putative membrane glycoprotein [†] UL120 family [†]	
UL122	E ^{a,b}	IE/E (Mocarski Jr, 1996;Chambers et al., 1999)	Q6SW29	Gene expression/regulation	Negative regulator MIEP IE2	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Martinez et al., 2014)

UL122	E ^{a,b}	IE/E (Mocarski Jr, 1996;Chambers et al., 1999)	Q6SW29	Latency*	IE2	(Goodrum et al., 2002)
UL122	E ^{a,b}	IE/E (Mocarski Jr, 1996;Chambers et al., 1999)	Q6SW29	Modulation of host cell cycle/protein synthesis	Repression p53 IE2	(Apweiler et al., 2004;Kwon et al., 2012)
UL123	SGD ^a / GD ^b	IE (Mocarski Jr, 1996;Chambers et al., 1999)	F5HCM1	Gene expression/regulation	Antagonizes histone acetylation and affects nucleosome organization to activate transcription IE1	(Apweiler et al., 2004;Nevels et al., 2004;Mocarski Jr, 2007;Zalckvar et al., 2013)
UL123	SGD ^a / GD ^b	IE (Mocarski Jr, 1996;Chambers et al., 1999)	F5HCM1	Modulation of host cell cycle/protein synthesis	IE1	(Apweiler et al., 2004)
UL123	SGD ^a / GD ^b	IE (Mocarski Jr, 1996;Chambers et al., 1999)	F5HCM1	Immunomodulation	Inhibition of type I IFN signaling via STAT2 Disruption of IL6 signaling via STAT3 Elicits a type II IFN-like response via STAT1 IE1	(Apweiler et al., 2004;Paulus et al., 2006;Knoblach et al., 2011;Reitsma et al., 2013)
UL123	SGD ^a / GD ^b	IE (Mocarski Jr, 1996;Chambers et al., 1999)	F5HCM1	Latency*	Binds nucleosomes, role in latency suggested IE1	(Rossetto et al., 2013;Mucke et al., 2014)
UL124	SGD ^a / D ^b	E (Chambers et al., 1999)	F5HHS3	Latency*	Membrane glycoprotein †	(Goodrum et al., 2002)
UL125	N/A	E (Chambers et al., 1999)	P16835 (AD169)	Latency*		(Goodrum et al., 2002)

UL126A	N/A	N/A	N/A	Latency*		(Rossetto et al., 2013)
UL127	D ^a	E (Lashmit et al., 2004)	P16771 (AD169)	Unknown		
UL128	D ^b	E (Chambers et al., 1999)	P16837 (AD169)	Latency*	Putative secreted protein [†]	(Goodrum et al., 2002)
UL128	D ^b	E (Chambers et al., 1999)	P16837 (AD169)	Cell tropism/Cell type-specific replication	Involved in cell tropism endothelial cells Putative secreted protein [†]	(Mocarski Jr, 2007;Ryckman et al., 2008;Stanton et al., 2010)
UL128	D ^b	E (Chambers et al., 1999)	P16837 (AD169)	Immunomodulation	Modulation chemo- and/or cytokines Modulation of monocyte migration Putative secreted protein [†]	(Mocarski Jr, 2007;Straschewski et al., 2011;Zheng et al., 2012)
UL129	MGD ^a	L (Chambers et al., 1999)	P16838 (AD169)	Unknown		
UL130	D ^{a,b}	E/L (Chambers et al., 1999)	F5HCP3	Cell tropism/Cell type-specific replication	Involved in cell tropism endothelial and epithelial cells Putative secreted protein [†]	(Patrone et al., 2005;Ryckman et al., 2008;Stanton et al., 2010)
UL131A	N/A	L (Akter et al., 2003)	F5HET4	Virion protein	Putative secreted protein [†]	(Apweiler et al., 2004)
UL131A	N/A	L (Akter et al., 2003)	F5HET4	Cell tropism/Cell type-specific replication	Involved in cell tropism endothelial and epithelial cells Putative secreted protein [†]	(Schuessler et al., 2008;Stanton et al., 2010;Schuessler et al., 2012)
UL132	MGD ^a / D ^b	E/L (Chambers et al., 1999)	F5HGU6	Cell tropism/Cell type-specific replication*	May be involved in cell tropism epithelial cells Virion glycoprotein [†]	(Womack, 2011)

UL132	MGD ^a / D ^b	E/L (Chambers et al., 1999)	F5HGU6	Virion protein	Virion glycoprotein [†]	(Spaderna et al., 2005;Mocarski Jr, 2007)
UL132	MGD ^a / D ^b	E/L (Chambers et al., 1999)	F5HGU6	Latency*	Virion glycoprotein [†]	(Goodrum et al., 2002)
UL133	N/A	L ? (Bughio et al., 2013)	Q6SW10	Assembly/Maturation/Egress ^{(SUL} 133-UL138)	Tegumentation and secondary envelopment Putative membrane protein [†]	(Bughio et al., 2013)
UL133	N/A	L ? (Bughio et al., 2013)	Q6SW10	Latency*	Putative membrane protein [†]	(Goodrum et al., 2002;Petrucci et al., 2009;Rossetto et al., 2013)
UL134	N/A	L ? (Bughio et al., 2013)	Q66M59 (**)	Assembly/Maturation/Egress ^{(SUL} 133-UL138)	Tegumentation and secondary envelopment	(Bughio et al., 2013)
UL135	N/A	L ? (Bughio et al., 2013)	F5HAQ7	Latency*	Putative secreted protein [†]	(Goodrum et al., 2002;Rossetto et al., 2013)
UL135	N/A	L ? (Bughio et al., 2013)		Assembly/Maturation/Egress ^{(SUL} 133-UL138)	Tegumentation and secondary envelopment Putative secreted protein [†]	(Bughio et al., 2013)
UL136	N/A	L ? (Bughio et al., 2013)	F5HF35	Assembly/Maturation/Egress ^{(SUL} 133-UL138)	Tegumentation and secondary envelopment Putative membrane protein [†]	(Bughio et al., 2013)
UL138	N/A	E/L (Petrucci et al., 2009); L? (Bughio et al., 2013)	F5HGQ8	Assembly/Maturation/Egress ^{(SUL} 133-UL138)	Tegumentation and secondary envelopment Putative membrane protein [†]	(Bughio et al., 2013)

UL138	N/A	E/L (Petrucci et al., 2009); L? (Buglio et al., 2013)	F5HGQ8	Latency	Established LAT Putative membrane protein [†]	(Goodrum et al., 2002; Goodrum et al., 2007; Petrucci et al., 2009; Rossetto et al., 2013)
UL138	N/A	E/L (Petrucci et al., 2009); L? (Buglio et al., 2013)	F5HGQ8	Immunomodulation	Modulation of TNF signaling Putative membrane protein [†]	(Le et al., 2011; Montag et al., 2011)
UL139	N/A	E/L (Bradley et al., 2008)	Q6SW14	Immunomodulation*	Homology with CD24 Putative membrane glycoprotein [†]	(Qi et al., 2006)
UL140	N/A	L (Ma et al., 2013)	F5HCK7	Unknown	Putative membrane protein [†]	
UL141	N/A	L (Ma et al., 2013)	Q6RJQ3	Immunomodulation	Modulation of NK cell signaling/function (via TRAIL) Membrane glycoprotein [†] UL14 family [†]	(Apweiler et al., 2004; Mocarski Jr, 2007; Prod'homme et al., 2010; Smith et al., 2013)
UL142	N/A	L (Wills et al., 2005)	F5HHH2	Immunomodulation	MHC-I homologue Putative membrane glycoprotein UL18 family [†]	(Wills et al., 2005; Mocarski Jr, 2007; Ashiru et al., 2009)
UL144	N/A	E (Poole et al., 2008)	F5HAM0	Immunomodulation	Modulation of chemo- and/or cytokines	(Poole et al., 2006; Poole et al., 2008)
UL144	N/A	E (Poole et al., 2008)	F5HAM0	Latency	Established LAT	(Poole et al., 2013)
UL145	N/A	L (Wang et al., 2011); IE (Raftery et al., 2009)	F5HF44	Latency*		(Goodrum et al., 2002)

UL146	D ^a	E/L (Chambers et al., 1999)(annotated as UL152)	Q6SWX2 (**)	Immunomodulation	vCXCL1 (CXCR1 and CXCR2) Secreted glycoprotein [†] UL146 family [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Luttichau, 2010)
UL147	D ^a	E/L (Chambers et al., 1999)	F5HA06	Immunomodulation*	vCXCL2 Putative secreted glycoprotein [†] UL146 family [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Heo et al., 2008;Luttichau, 2010)
UL147A	N/A	E/L (Lurain et al., 2006)	F5H8R0	Unknown	Putative membrane protein [†]	
UL148	N/A	E/L (Lurain et al., 2006)	F5H8Q3	Cell tropism/Cell type-specific replication*	May be involved in cell tropism epithelial cells Putative membrane glycoprotein [†]	(Womack, 2011)
UL148A	N/A	N/A	F5HE74	Unknown	Putative membrane protein [†]	
UL148B	N/A	N/A	F5HAK6	Unknown	Putative membrane protein [†]	
UL148C	N/A	N/A	F5HDE7	Unknown	Putative membrane protein [†]	
UL148D	N/A	N/A	F5HHL7	Unknown	Putative membrane protein [†]	
UL149	N/A	N/A	Q6PMP2 (**)	Unknown		
UL150	N/A	N/A	Q6SW05	Latency*	Putative secreted protein [†]	(Goodrum et al., 2002)
US1	D ^{a,b}	IE (Mocarski Jr, 1996)	Q6SW03	Unknown	US1 family [†]	

US2	D ^{a,b}	IE (Hesse et al., 2013); E (Mocarski Jr, 1996)	F5HE05	Immunomodulation	Degradation of MHC-I Membrane glycoprotein [†] US2 family [†]	(Oresic et al., 2006; Oresic and Tortorella, 2008; Noriega et al., 2012; Hesse et al., 2013)
US3	D ^{a,b}	IE (Mocarski Jr, 1996; Chambers et al., 1999)	F5HEU0	Immunomodulation	Degradation of MHC-I Membrane glycoprotein [†] US2 family [†]	(Noriega et al., 2012)
US6	D ^{a,b}	E/L (Jones et al., 1991; Chambers et al., 1999)	Q6SW00	Immunomodulation	Modulation of T- and NK-cell signaling/function Putative membrane glycoprotein [†] US6 family [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007; Dugan and Hewitt, 2008; Kim et al., 2008)
US7	D ^{a,b}	E/L (Jones et al., 1991; Chambers et al., 1999)	F5HDD3	Immunomodulation*	US7 is modulated by miRNA Membrane glycoprotein [†] US6 family [†]	(Apweiler et al., 2004; Tirabassi et al., 2011)
US8	D ^{a,b}	E (Jones et al., 1991; Chambers et al., 1999)	F5HB52	Immunomodulation	Binds MHC-I [†] Membrane glycoprotein [†] US6 family [†]	(Dunn et al., 2003; Apweiler et al., 2004; Mocarski Jr, 2007)
US9	D ^{a,b}	E (Jones et al., 1991; Chambers et al., 1999)	F5HC33	Immunomodulation*	Membrane glycoprotein [†] US6 family [†]	(Apweiler et al., 2004)

US9	D ^{a,b}	E (Jones et al., 1991;Chambers et al., 1999)	F5HC33	Viral spread	Specifically cell-to-cell transmission in endothelial cells Membrane glycoprotein [†] US6 family [†]	(Pereira et al., 1995;Mocarski Jr, 2007)
US10	D ^{a,b}	E (Jones et al., 1991;Chambers et al., 1999)	F5HFJ7	Immunomodulation	Delays MHC-I trafficking [†] Membrane glycoprotein [†] US6 family [†]	(Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007)
US11	D ^{a,b}	E (Jones et al., 1991;Chambers et al., 1999)	Q6SVZ5	Immunomodulation	Degradation MHC-I [†] Membrane glycoprotein [†] US6 family [†]	(Wiertz et al., 1996;Dunn et al., 2003;Apweiler et al., 2004;Mocarski Jr, 2007;Hesse et al., 2013)
US12	D ^{a,b}	E (Chambers et al., 1999)	F5HE44	Unknown	Putative multiple transmembrane protein [†] US12 family [†]	
US13	MGD ^a / D ^b	E (Chambers et al., 1999)	F5H914	Unknown	Putative multiple transmembrane protein [†] US12 family [†]	
US14	D ^{a,b}	E (Chambers et al., 1999)	F5HD92	Unknown	Putative multiple transmembrane protein [†] US12 family [†]	

US15	D ^{a,b}	E/L (Chambers et al., 1999)	F5HFH0	Unknown	Putative multiple transmembrane protein † US12 family [†]	
US16	D ^{a,b}	E (Chambers et al., 1999)	Q6SVZ0	Cell tropism/Cell type-specific replication	Involved in cell tropism epithelial and endothelial cells Putative multiple transmembrane protein † US12 family [†]	(Mocarski Jr, 2007;Bronzini et al., 2012)
US17	D ^{a,b}	E (Chambers et al., 1999)	F5H9N9	Assembly/Maturation/Egress	Final virion assembly and egress Putative multiple transmembrane protein † US12 family [†]	(Gurczynski et al., 2013)
US17	D ^{a,b}	E (Chambers et al., 1999)	F5H9N9	Immunomodulation	Controls virion composition to elicit a balanced immune response	(Gurczynski et al., 2013)
US17	D ^{a,b}	E (Chambers et al., 1999)	F5H9N9	Latency*		(Rossetto et al., 2013)
US18	D ^{a,b}	E (Chambers et al., 1999); L (Guo and Huang, 1993)	F5HE69	Unknown	Putative multiple transmembrane protein † US12 family [†]	
US19	D ^{a,b}	E (Guo and Huang, 1993;Chambers et al., 1999)	F5HAR3	Viral growth	Temperance in epithelial cells Putative multiple transmembrane protein † US12 family [†]	(Mocarski Jr, 2007)

US20	D ^{a,b}	E (Guo and Huang, 1993;Chambers et al., 1999)	F5HGH8	Unknown	Putative multiple transmembrane protein [†] US12 family [†]	
US21	D ^{a,b}	N/A	F5HHT6	Unknown	Putative multiple transmembrane protein [†] US12 family [†]	
US22	D ^{a,b}	E (Guo and Huang, 1993;Chambers et al., 1999)	F5HDC7	Cell tropism/Cell type-specific replication*	May be involved in cell tropism epithelial cells Tegument protein [†] US22 family [†]	(Womack, 2011)
US22	D ^{a,b}	E (Guo and Huang, 1993;Chambers et al., 1999)	F5HDC7	Virion protein	Tegument protein [†] US22 family [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
US23	MGD ^a / GD ^b	E (Chambers et al., 1999)	F5HAZ3	Virion protein	Tegument protein [†] US22 family [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
US24	D ^a /GD ^b	E (Chambers et al., 1999)	F5H8S6	Virion protein	Tegument protein [†] US22 family [†]	(Apweiler et al., 2004;Mocarski Jr, 2007)
US24	D ^a /GD ^b	E (Chambers et al., 1999)	F5H8S6	Gene expression/regulation	Important for IE, E and L gene expression Tegument protein [†] US22 family [†]	(Feng et al., 2006)
US25	D ^{a,b}	E/L (Chambers et al., 1999)	P17145 (AD169)	Unknown		
US26	SGD ^a / GD ^b	E (Chambers et al., 1999)	F5H991	Unknown	US22 family [†]	

US27	D ^{a,b}	E (Chambers et al., 1999); L (Vieira et al., 1998)	F5HDK1	Virion protein	Virion glycoprotein [†] GPCR family [†]	(Mocarski Jr, 2007)
US27	D ^{a,b}	E (Chambers et al., 1999); L (Vieira et al., 1998)	F5HDK1	Cell tropism/Cell type-specific replication	Deletion virus has growth defect in endothelial cells	(O'Connor and Shenk, 2011)
US27	D ^{a,b}	E (Chambers et al., 1999); L (Vieira et al., 1998)	F5HDK1	Viral spread	Involved in viral spread via extracellular route	(O'Connor and Shenk, 2011)
US27	D ^{a,b}	E (Chambers et al., 1999); L (Vieira et al., 1998)	F5HDK1	Immunomodulation	Modulation of chemo- and/or cytokine receptor	(Apweiler et al., 2004;Arnolds et al., 2013)
US27	D ^{a,b}	E (Chambers et al., 1999); L (Vieira et al., 1998)	F5HDK1	Modulation of host cell cycle/protein synthesis	Increase in cell proliferation and DNA replication Upregulation pro-survival transcription factors	(Lares et al., 2013)
US28	D ^{a,b}	E (Vieira et al., 1998;Chambers et al., 1999)	F5HF62	Modulation of host cell cycle/protein synthesis	Mediates cellular activation and migration Membrane protein [†] GPCR family [†]	(Mocarski Jr, 2007)
US28	D ^{a,b}	E (Vieira et al., 1998;Chambers et al., 1999)	F5HF62	Angiogenesis/Tumor formation	Promotes angiogenesis and tumor formation Membrane protein [†] GPCR family [†]	(Maussang et al., 2006;Maussang et al., 2009;Slinger et al., 2010)

US28	D ^{a,b}	E (Vieira et al., 1998;Chambers et al., 1999)	F5HF62	Immunomodulation	Modulation of chemo- and/or cytokine signaling Membrane protein [†] GPCR family [†]	(Apweiler et al., 2004;Mocarski Jr, 2007;Stropes et al., 2009)
US28	D ^{a,b}	E (Vieira et al., 1998;Chambers et al., 1999)	F5HF62	Gene expression/regulation	Activator of MIEP Membrane protein [†] GPCR family [†]	(Wen et al., 2009)
US28	D ^{a,b}	E (Vieira et al., 1998;Chambers et al., 1999)	F5HF62	Latency*	Transcribed in latently infected THP-1 Membrane protein [†] GPCR family [†]	(Beisser et al., 2002;Goodrum et al., 2002)
US29	D ^{a,b}	E/L (Chambers et al., 1999)	F5HG95	Cell tropism/Cell type-specific replication*	May be involved in cell tropism/cell-specific replication endothelial cells Putative membrane glycoprotein [†]	(Mocarski Jr, 2007)
US30	EG ^a /D ^b	E (Chambers et al., 1999)	F5HB41	Viral growth*	May be involved in temperance in fibroblasts [†] Putative membrane glycoprotein [†]	(Mocarski Jr, 2007)
US31	D ^{a,b}	N/A	F5HAM4	Unknown	US1 family [†]	
US32	D ^{a,b}	L (Chambers et al., 1999)	F5HD03	Latency*	US1 family [†]	(Goodrum et al., 2002)
US33	D ^a	E (Chambers et al., 1999)	P09697 (AD169)	Unknown		
US34	D ^{a,b}	E (Chambers et al., 1999)	F5HEF3	Latency*	Putative secreted protein [†]	(Goodrum et al., 2002)
US34A	D ^b	N/A	Q6SVX3	Unknown	Putative membrane protein [†]	

TRS1	MGD ^a / GD ^b	IE (Blankenship and Shenk, 2002)	Q6SVX2	(DNA) Replication	Association with UL44, essential for replication Tegument protein [†] US22 family [†]	(Marshall et al., 2009;Strang et al., 2010)
TRS1	MGD ^a / GD ^b	IE (Blankenship and Shenk, 2002)	Q6SVX2	Gene expression/regulation	Activator IE expression Tegument protein [†] US22 family [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
TRS1	MGD ^a / GD ^b	IE (Blankenship and Shenk, 2002)	Q6SVX2	Assembly/Maturation/Egress	Role in integrity of assembly complex Capsid assembly [†] Tegument protein [†] US22 family [†]	(Dunn et al., 2003) (Blankenship and Shenk, 2002;Adamo et al., 2004;Mocarski Jr, 2007;Buchkovich et al., 2009)
TRS1	MGD ^a / GD ^b	IE (Blankenship and Shenk, 2002)	Q6SVX2	Virion protein	Tegument protein [†] US22 family [†]	(Dunn et al., 2003;Mocarski Jr, 2007)
TRS1	MGD ^a / GD ^b	IE (Blankenship and Shenk, 2002)	Q6SVX2	Immunomodulation	Inhibition autophagy Prevents activation RNase L Tegument protein [†] US22 family [†]	(Apweiler et al., 2004;Child et al., 2004;Chaumorcel et al., 2012)
TRS1	MGD ^a / GD ^b	IE (Blankenship and Shenk, 2002)	Q6SVX2	Modulation of host cell cycle/protein synthesis	Inhibition PKR, block shut down of translation Tegument protein [†] US22 family [†]	(Apweiler et al., 2004;Cassady, 2005;Hakki et al., 2006;Mocarski Jr, 2007;Marshall et al., 2009;Child et al., 2012;Bierle et al., 2013)

IRS	D ^a	IE (Blankenship and Shenk, 2002)	Q6SW04	(DNA) Replication	Association with UL44, essential for replication Tegument protein [†] US22 family [†]	(Marshall et al., 2009; Strang et al., 2010)
IRS	D ^a	IE (Blankenship and Shenk, 2002)	Q6SW04	Gene expression/regulation	Activator IE expression Tegument protein [†] US22 family [†]	(Dunn et al., 2003; Mocarski Jr, 2007)
IRS	D ^a	IE (Blankenship and Shenk, 2002)	Q6SW04	Virion protein	Tegument protein [†] US22 family [†]	(Mocarski Jr, 2007)
IRS	D ^a	IE (Blankenship and Shenk, 2002)	Q6SW04	Modulation of host cell cycle/protein synthesis	Inhibition PKR, block shut down of translation Tegument protein [†] US22 family [†]	(Apweiler et al., 2004; Cassady, 2005; Hakki et al., 2006; Mocarski Jr, 2007; Marshall et al., 2009; Child et al., 2012; Bierle et al., 2013)
RNA2.7	N/A	E (Wu et al., 1992)	N/A	Apoptosis	Inhibitor of apoptosis	(Reeves et al., 2007)
RNA2.7	N/A	E (Wu et al., 1992)	N/A	Latency*		(Rossetto et al., 2013)
RNA1.2	N/A	N/A	N/A	Unknown		
RNA4.9	N/A	N/A	N/A	Latency*		(Rossetto et al., 2013)
RNA4.9	N/A	N/A	N/A	Gene expression/regulation		(Rossetto et al., 2013)
RNA5.0	N/A	N/A	N/A	Unknown		
IRL14	N/A	N/A	P21601 (AD169)	Unknown		

1 Supplementary table 1. Function annotation of the HCMV genome. **Gene:** given are the gene name based on the official gene name in the
2 internal/terminal repeats (I/TRL), the unique long (UL) and unique short (US) regions. **Growth:** for each gene information is provided if the
3 gene is essential (E), dispensable (D) or if deletion causes moderate growth defects (MGD), severe growth defects (SGD) or induces a
4 growth enhancement (EG). These annotations were based on Dunn et al 2003 (a) and Yu et al 2003 (b). Yu et al. 2003 did not differentiate

5 between moderate or severe growth defects and thus growth defects were marked as GD. **Kinetics:** the timing of gene expression in the
6 temporal cascade of HCMV is provided for each gene. **Key:** immediate-early (IE), early (E), early-late (E/L) or late (L). **Uniprot entry:**
7 several functional annotations were based on Uniprot entries; the entry number for each gene is given. Only reviewed entries were used and
8 unless otherwise mentioned between brackets, the entry for HCMV Merlin was used. **Key:** **unreviewed Uniprot entry. **Function keyword:**
9 every gene (product) was put in a high level functional category which is the function keyword. **Key:** * indicates a proposed function which
10 needs further experimental validation; \$ these genes were researched in a cluster e.g. \$UL118-UL119. **Process/protein/gene family:** to
11 provide more information about the function keyword, also the process in which the gene (product) is involved is briefly described. Further,
12 if available, information about the protein composition and/or gene family is provided. **Key:** † information provided by Mocarski et al.
13 2007, unlabeled entries are referenced in the References column; ? † annotated by Mocarski et al. 2007 with a question mark. **References:**
14 references used for the function keyword and additional information in the process/protein/gene family column