

Chapter 4.4

Concluding remarks Section 4

It is becoming evident that DC-SIGN is a general receptor for viruses, including HIV-1, MV, HSV, CMV and dengue virus (Table 4.4). The exceptions are hepatitis B virus, HPV L1/VLPs and varicella-zoster virus, which do not interact with DC-SIGN. These results indicate that most viral glycoproteins are decorated with glycans that interact with DC-SIGN, suggesting that viruses have evolved to bind to DC-SIGN to invade the host and escape from immune responses. In turn, these data suggest that humans have evolved a specific pattern-recognition receptor to recognize a large variety of viruses for host defences. However, other mechanisms might as well have attributed to the development of this specific glycosylation of viral glycoproteins, such as evasion from antibody responses, and the broad specificity of DC-SIGN. These possibilities will be further discussed in chapter 8.2

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Table 4.4 Overview of viruses that bind or do not bind to DC-SIGN (Herpes simplex virus (HSV), cytomegalovirus (CMV), human immunodeficiency virus (HIV), simian immunodeficiency virus (SIV), measles virus (MV), hepatitis C virus (HCV), human papilloma virus (HPV), hepatitis B virus (HBV), varicella-zoster virus (VZV))

Binding DC-SIGN	Virus	Family	Envelope?	Outcome of virus DC-SIGN Interaction?			Reference
				Infection <i>in cis</i>	Trans-infection	Antigen-presentation	
Binding DC-SIGN	HSV	Herpesviridae	+	+	?	?	Chapter 4.2
	CMV	Herpesviridae	+	+	+	?	5
	HIV	Retroviridae	+	+	+	+	4,8
	SIV	Retroviridae	+	+	+	?	8,12
	MV	Morbilliviridae	+	+	+	+	Chapter 3
	Ebola virus	Filoviridae	+	+	+	?	1
	Marburg virus	Filoviridae	+	+	?	?	11
	SARS-coV	Coronavirae	+	+	+	?	6,15
	Dengue virus	Flaviviridae	+	+	+	?	9,14
	West Nile virus	Flaviviridae	+	+	?	?	2
	HCV	Flaviviridae	+	?	+	+	10,13
	Sindbis virus	Togaviridae	+	+	?	?	7
	HPV L1/L2 VLPs	Papovaviridae	-	?	?	?	3
	Not-binding DC-SIGN	HBV	Hepadnaviridae	+	N.A.	N.A.	N.A.
HPV L1/L2 VLPs		Papovaviridae	-	N.A.	N.A.	N.A.	Chapter 4.3
VZV		Herpesviridae	+	N.A.	N.A.	N.A.	5