CLINICAL DIAGNOSTICS

Viral Haemorrhagic Fevers (VHFs)

Viral Haemorrhagic Fevers (VHFs) can result from infections with diverse viruses across several viral families, causing acute illness with fever and haemorrhagic signs. With case fatality rates exceeding 50%, the absence of specific medical countermeasures makes some VHFs potential sources for bioweapon development (Logue et al., 1970). Despite dedicated efforts, viruses like dengue, Ebola, Lassa, and Crimean-Congo haemorrhagic fever virus persist, posing a dual threat in regions with demographic shifts, political unrest, and socio-economic instability. Urgent research and interventions are crucial to address this ongoing health challenge. (Gonzalez et al., 2017)

The most common pathogens in this group and their vectors include:

Hantaviruses such as
Hantaan virus, Puumala virus
Lassa Fever virus

Ebola virus
Marburg virus

Rift Valley Fever virus
Dengue virus
Chikungunya virus
Yellow Fever virus

Crimean Congo Haemorrhagic Fever virus

Antigens

	Intravirioun proteins	Viral surface proteins	Virus-Like Particles (VLPs)	Nonstructural proteins	Viral Lysate
Hantavirus	NP				
Lassa Fever Virus		GP1, GP2			
Ebola Virus	NP	GP, GP1			
Marburg Virus		GP			
Rift Valley Fever	NP				
Yellow Fever Virus		Envelope		NS1	+
Dengue Virus		Envelope, Envelope DIII domain	+	NS1	+
Chikungunya Virus		E1, E2	+		+
Crimean Congo Haemorrhagic Fever Virus	NP	Gn, Gc			
Puumala Virus	NP				

For the next-level detection of your diagnostic assays, consider our bestselling Dengue virus-like particles (VLPs). They have been developed to maintain the surface antigenicity of native viruses but are safe to handle due to the lack of a viral genome. See one of many publications with our Dengue VLPs:

"VLPs were confirmed to be heterogeneous in size morphology and maturation state. Yet, we show that many highly conformational and quaternary structure-dependent antibody epitopes found on virus particles are efficiently displayed on DENV1–4 VLP surfaces as well. Additionally, DENV VLPs can efficiently be used as antigens to deplete DENV patient sera from serotype specific antibody populations" (Metz et al., 2018).

Antibodies

	NP	GP	VLP	NS1	Envelope	Capsid
Hantavirus	+					
Lassa Fever Virus		+				
Ebola Virus	+	+				
Marburg Virus	+					
Rift Valley Fever	+					
Yellow Fever Virus				+		
Dengue Virus			+	+	+	
Chikungunya Virus			+		+	+
Crimean Congo Haemorrhagic Fever Virus	+	+				

Matched pairs

Our experienced Assay Development Team prepared over 300 matched antibody pairs perfect for ELISA and Lateral Flow assays. Contact us for more details!

Email: nac.contact@lgcgroup.com

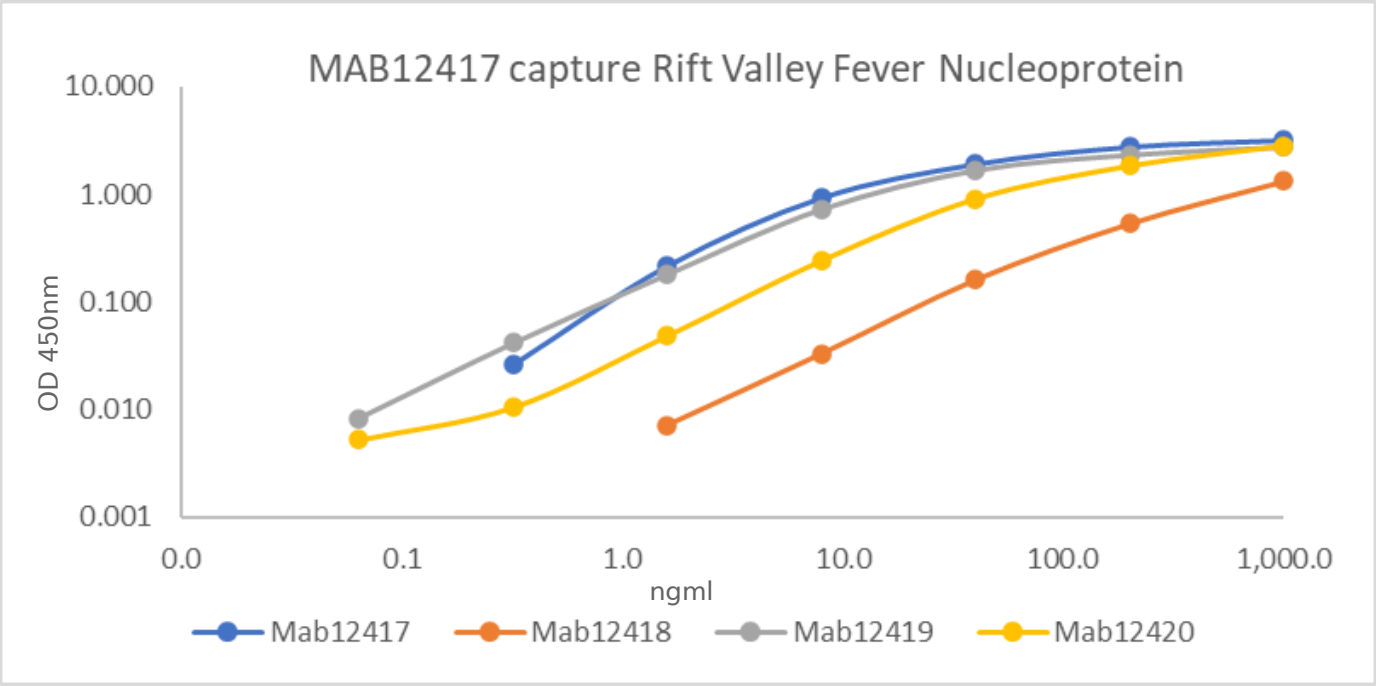

Figure 1. Example of the matched pair data produced by our assay experts.

Custom solutions

If you have a unique need in the space of viral antigens or antibodies, we can offer our experience to collaborate in a bespoke development project. Our specialized team can produce native and recombinant antigens, antibodies, and viral lysates,and downstream processing. We operate to BSL-2 standards and offer multiple validated options for inactivating viruses, as well as multiple conjugation options.

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References

Gonzalez, J.-P., Souris, M. and Valdivia-Granda, W. (2017) 'Global spread of hemorrhagic fever viruses: Predicting pandemics', Methods in Molecular Biology, pp. 3–31. doi:10.1007/978-1-4939-6981-4_1.

Metz, S.W. et al. (2018) 'Dengue virus-like particles mimic the antigenic properties of the Infectious Dengue Virus Envelope', Virology Journal, 15(1). doi:10.1186/s12985-018-0970-2.

Logue, J. et al. (1970) Overview of human viral hemorrhagic fevers, SpringerLink. Available at: https://link.springer.com/chapter/10.1007/978-3-030-03071-1_2 (Accessed: 19 January 2024).