

Flaviviruses infect up to 400 million people yearly, causing a spectrum of disorders, which, in severe cases, are often fatal. A vaccine is not yet available for most flavivirus diseases hence, vector control and accessible, reliable diagnostics are central to limiting the spread of those arboviral infections. The flavivirus vectors include different species that spread worldwide, highlighting their pandemic potential (Pierson & Diamond, 2020).



Aedes mosquitos

- Zika virus
- Dengue virus
- Yellow Fever virus
- West Nile virus
- Wesselbron virus



Tick-born flaviviruses

- Tick-borne encephalitis virus
- Powassan virus



Culex mosquitos

- West Nile virus
- St Louis Encephalitis virus
- Usutu virus
- Japanese encephalitis virus

Antigens

The Native Antigen Company offers an extensive range of flavivirus antigens, expressed as recombinant proteins in our mammalian expression system, insects cells as well as virus-like particles.

- **NS1 Proteins:** Our hexametrical NS1 proteins are glycosylated and folded like native antigens. Research have demonstrated that these proteins are functionally active.
- **Virus-Like-Particles:** Our VLPs are non-infectious and comprise Envelope and prM/M proteins. They have been extensively analysed to demonstrate near-identical antigenicity to native viruses.
- **Envelope Proteins:** To complement our flavivirus NS1 proteins and VLPs, we offer soluble Envelope proteins for use in the development of serological-based diagnostic assays.
- **DIII Envelope Proteins:** Our Envelope protein domain III antigens for the Zika and Dengue viruses, are key targets in the development of accurate and sensitive diagnostics, owing to their sequence conservation.
- **Cell Lysates:** Our products derived from native virus are prepared from infected cell cultures and include whole cell lysates alongside sucrose-density gradient purified viruses.

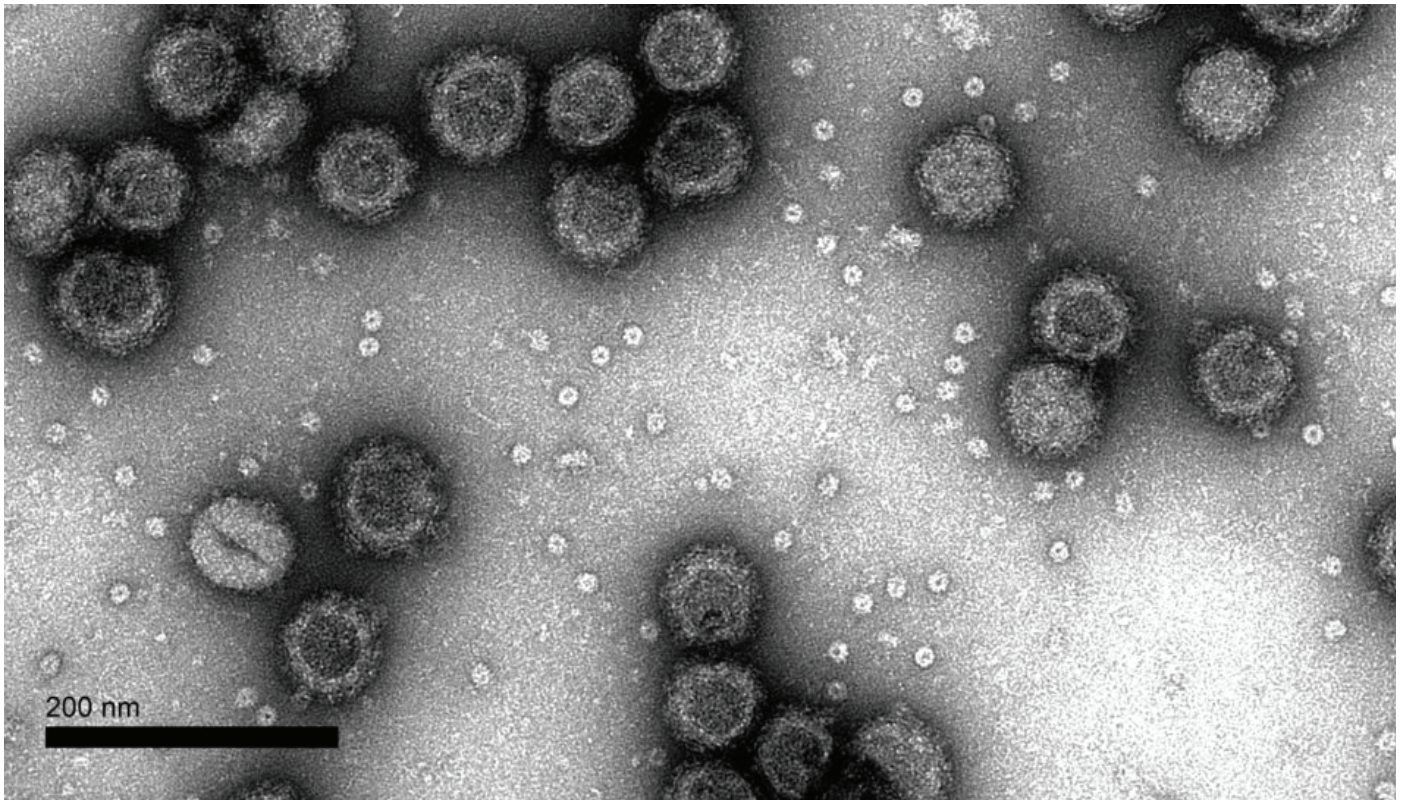
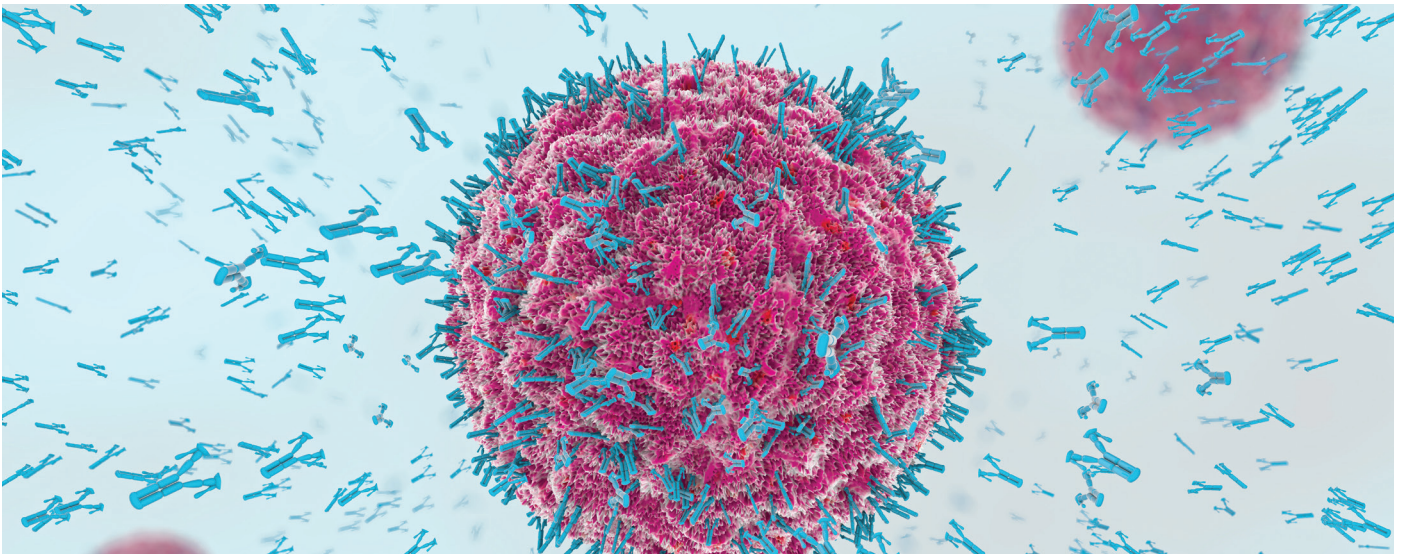


Figure 1: TEM Image of Dengue-2 Virus Like Particles

| Flavivirus | NS1 | VLP | Envelope | DIII | Lysate |
|--|------------|------------|-----------------|-------------|-------------------|
| Zika Uganda and Suriname strains | + | + | + | + | + |
| Dengue serotypes 1-4 | + | + | + | + | + |
| Yellow Fever 17D strain | + | + | + | Coming Soon | + |
| West Nile NY 2001-6263 strain | + | - | + | Coming Soon | + |
| Tick-borne encephalitis Far Eastern, Siberian and European strains | + | - | - | Coming Soon | Moscow B-4 Strain |
| Japanese encephalitis SA- 14 strain | + | + | + | Coming Soon | - |
| St Louis Encephalitis MS1-7 strain | + | - | - | - | - |
| Powassan | + | - | - | Coming Soon | - |
| Usutu | + | - | - | - | - |
| Wesselsbron SAH-177 99871-2 strain | + | - | - | - | - |



Antibodies

The chimeric pan-flavivirus envelope antibodies are based on the popular 4G2 clone specific for a well-defined conserved epitope on many key flaviviruses, including Dengue, Zika, West Nile and Yellow Fever viruses.

TNAC's wide selection of anti-NS1 antibodies are highly specific and overcome patient sera's inherent cross-reactivity, making them excellent reagents for antigen-capture immunoassay development.

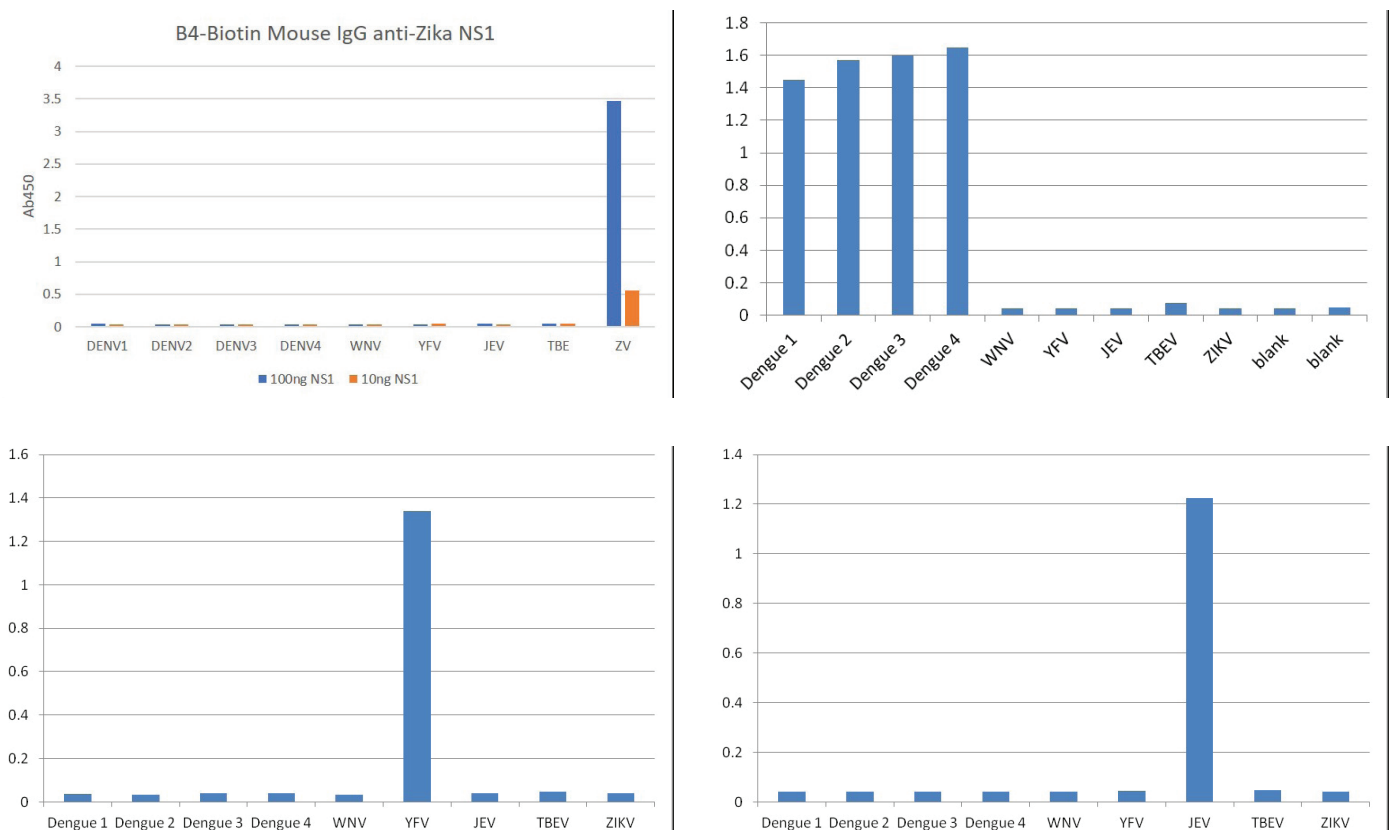


Figure 2. Examples of highly specific anti-NS1 clones in antigen-down ELISA

| Flavivirus Antibodies | NS1 | Env/ VLP | Membrane |
|----------------------------|-----|----------|----------|
| Zika | + | + | |
| Dengue 1-4 | + | + | + |
| Yellow Fever | + | - | |
| West Nile | + | + | |
| Tick-borne encephalitis | + | - | |
| Japanese encephalitis | + | + | |
| Powassan | + | - | |
| Broad/ Pan-Reactive clones | + | + | |

All your complex research needs

The Native Antigen company also offers a wide range of products and services to enable your vaccine research and assay design:

- Japanese Encephalitis Virus & Yellow Fever Serum panels (pre-vaccine, IgM and IgG bleeds)
- Zika Virus Total Antibody Detection Assay Development Kit
- Conjugation and labelling kits
- Bespoke development of NS1, Envelope and VLP antigens available as a service.
- Assay development services & support available.

If you haven't found what you are looking for contact us to enquire about our custom services at: NAC.CONTACT@LGCGROUP.COM

References

- Pierson, T.C. and Diamond, M.S. (2020) 'The continued threat of emerging flaviviruses', Nature Microbiology, 5(6), pp. 796–812. doi:10.1038/s41564-020-0714-0.

