

**Neurotropic viruses** continue to have devastating consequences worldwide due to their disruptive effects on the central nervous system. Here, we summarize how microBrain<sup>®</sup> 2D and 3D assay ready plates can be used to study viral infectivity, develop potential therapeutics, establish safety profiles, and ultimately accelerate development of treatments to combat viral-based diseases.

Physiologically relevant, consistent high-throughput screening platforms available for drug discovery.

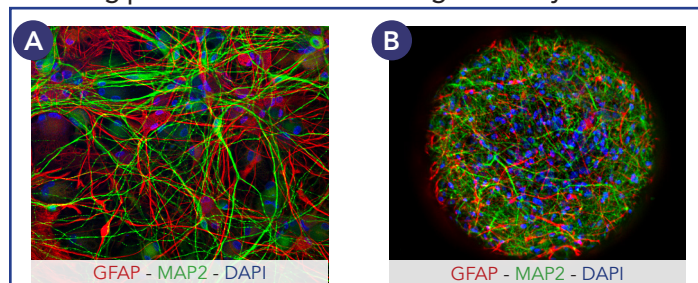


Figure 1. microBrain 2D and 3D 96- and 384-well Assay Ready platforms contain co-matured cultures of neurons and astrocytes. (A) microBrain 2D monolayer and (B) microBrain 3D spheroid.

microBrain 2D is a robust infectivity model for neurotropic viruses, including several encephalitis viruses.

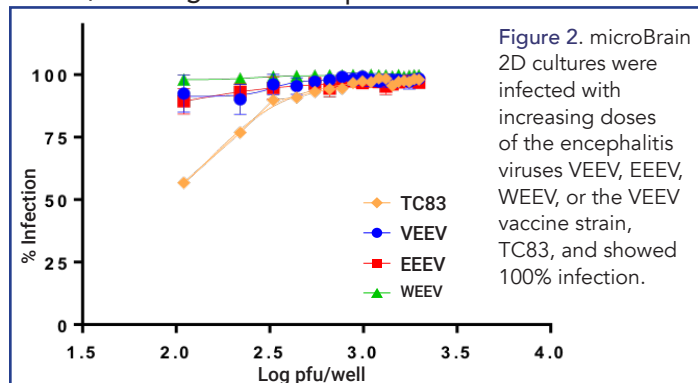


Figure 2. microBrain 2D cultures were infected with increasing doses of the encephalitis viruses VEEV, EEEV, WEEV, or the VEEV vaccine strain, TC83, and showed 100% infection.

Viral load and localization can be easily visualized and quantified using imaging techniques.

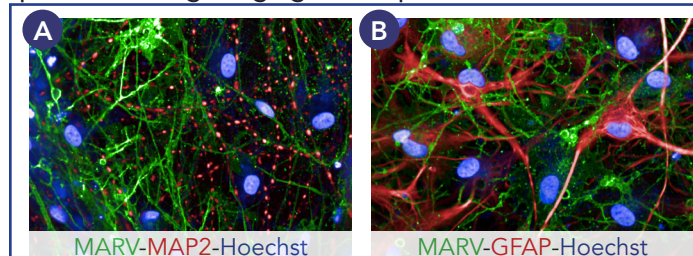


Figure 3. Examples of viral staining showing co-localization of (A) Marburg Virus (MARV) with neurons and (B) MARV with astrocytes in microBrain 2D wells.

Potential therapeutics can be identified using the microBrain 2D platform in viral life-cycle inhibition assays.

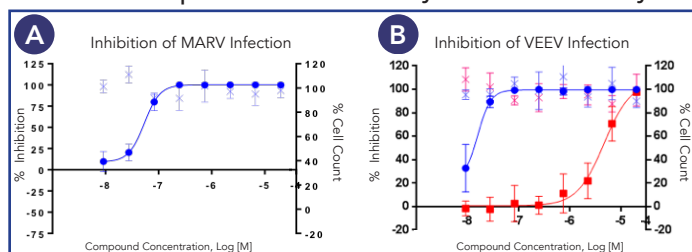


Figure 4. Pre-treatment identified dose-dependent infection inhibition for (A) MARV (Compound 1=●) and (B) VEEV (Compounds 2=● and 3=■). x and x = % Cell Count in both panels.

Compound safety profiles for neurotoxicity can be developed through functional testing.

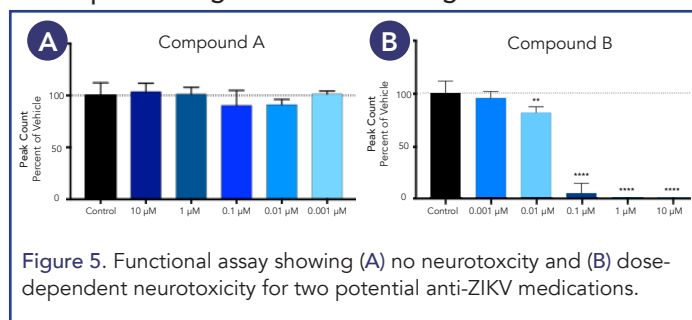


Figure 5. Functional assay showing (A) no neurotoxicity and (B) dose-dependent neurotoxicity for two potential anti-ZIKV medications.

### microBrain 2D and 3D technology

- Provides native human neural biology to study neurotropic viruses.
- Facilitates imaging studies with high consistency.
- Enables structural and functional assays to rapidly identify potential therapeutics and safety profiles.
- Accelerates anti-viral drug discovery with pre-plated, ready-to-use HTP screening models.

This work was done in part by scientists at USAMRIID  
United States Army Medical Research Institute of Infectious Diseases

For more information on this or other microBrain 2D and 3D applications, please visit [StemoniX.com](http://StemoniX.com) and contact us at [info@stemonix.com](mailto:info@stemonix.com)