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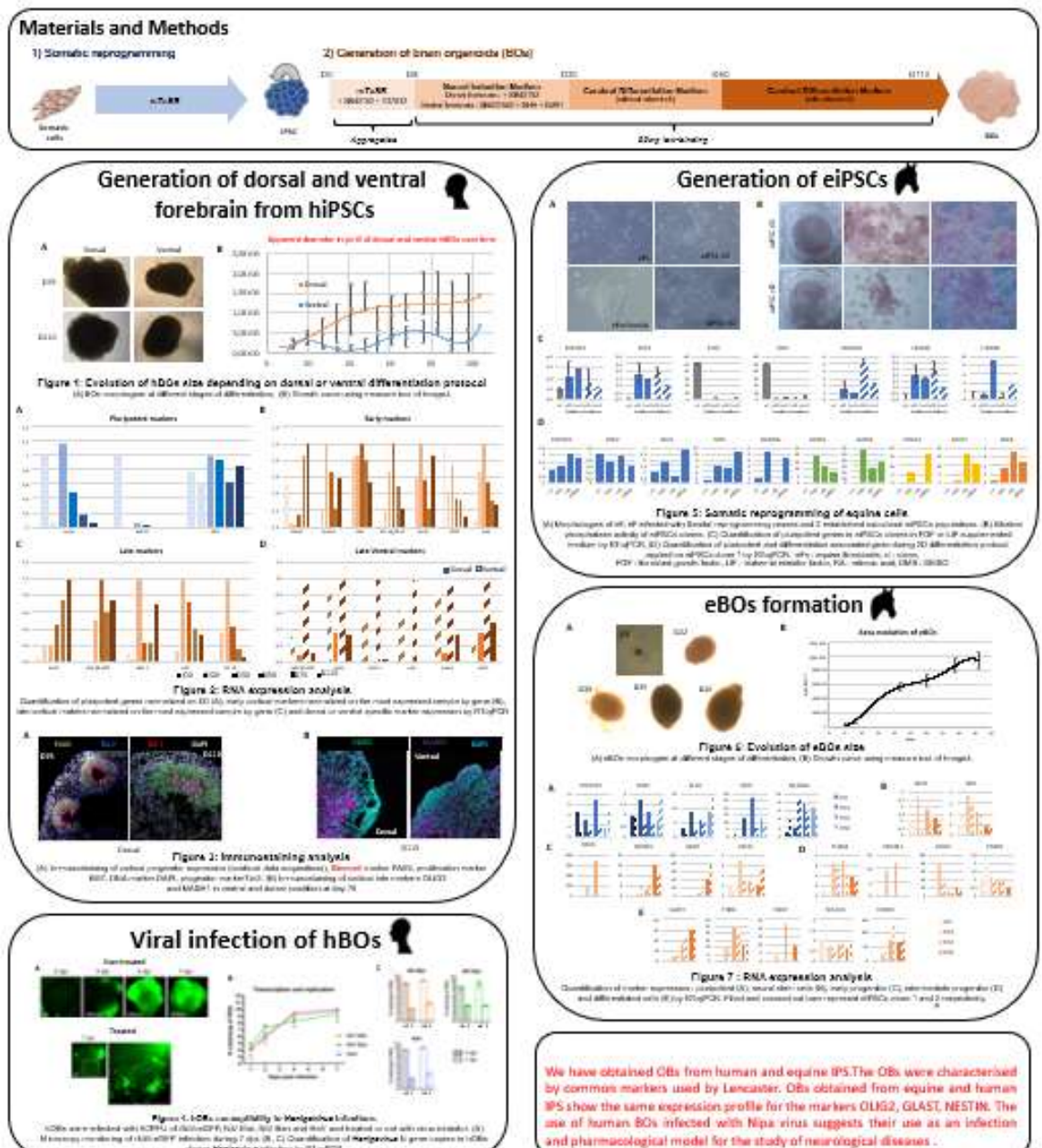
GENERATION OF HUMAN AND EQUINE CEREBRAL ORGANOID FROM INDUCED PLURIPOTENT STEM CELLS : TOOL TO STUDY NEUROTROPIC VIRUSES

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The development of global trade and current and future climate changes have a strong impact on the distribution area of many animal species such as mosquitoes, known to be reservoirs for many pathogens. Among these, the West-Nile virus (WNV) is a neurotropic flavivirus responsible for encephalitis which can be fatal in humans and horses and whose prevalence continues to increase in France and Europe. The Nipah (NiV) and Hendra (HeV) henipaviruses presently detected in South East Asia and Australia are also infecting both human and horses. One of the target tissues of these infections is the brain, a complex organ that is particularly difficult to access. Human brain organoids (hBOs) have recently offered a solution to overcome this difficulty. These structures, produced from pluripotent stem cells (PSCs), are now used as experimental models for the study of neurological diseases.



We have obtained BOs from human and equine iPSCs. The BOs were characterized by common markers used by Lancaster. BOs obtained from equine and human iPSCs show the same expression profile for the markers OLIG2, GLAST, NESTIN. The use of human BOs infected with Nipah virus suggests their use as an infection and pharmacological model for the study of neurological diseases.