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Establishing methods to explore the role of olfactory epithelium in Borna disease virus 1 infection

Inhalt

Borna disease virus 1 (BoDV1) is a neurotropic virus that leads to a fatal non suppurative meningoencephalitis in humans and other dead-end hosts like sheep and horses and a persistent symptomless infection in its reservoir host, the bicolored white toothed shrew (*Crocidura leucodon*). The olfactory epithelium is an ideal entry point for neurotropic infections due to the direct connection of olfactory sensory neurons to the brain. In an animal experiment infecting shrews the olfactory epithelium cells are positive for BoDV1 in immunohistochemistry and in-situ hybridization. To study the role of the olfactory epithelium further under the aspect of 3R we are developing in-vitro methods to study infection. In the first step we are developing organotypic slice cultures and dissociated cell cultures with the rat olfactory epithelium to compare them with the olfactory epithelium of shrews. For the dissociated cell cultures, tissue from the nasal cavity is dissected and incubated with enzymes to dissociate. The cells are growing on poly-L-lysine coated glass coverslips in cell culture plates. The tissue for the organotypic slice cultures is grown on Millicell cell culture inserts. Slices are cut by hand or tissue chopper. The ongoing production of mucin from goblet cells and large pieces containing of cartilage, bone, connective tissue and neuronal provides challenges in adequate nutrition with cell culture medium. LDH-assays are used to assess cell damage.

Keywords

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Professional Status of the Speaker

PhD Student

Junior Scientist Status

No, I am not a Junior Scientist.

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