

2015-7-1

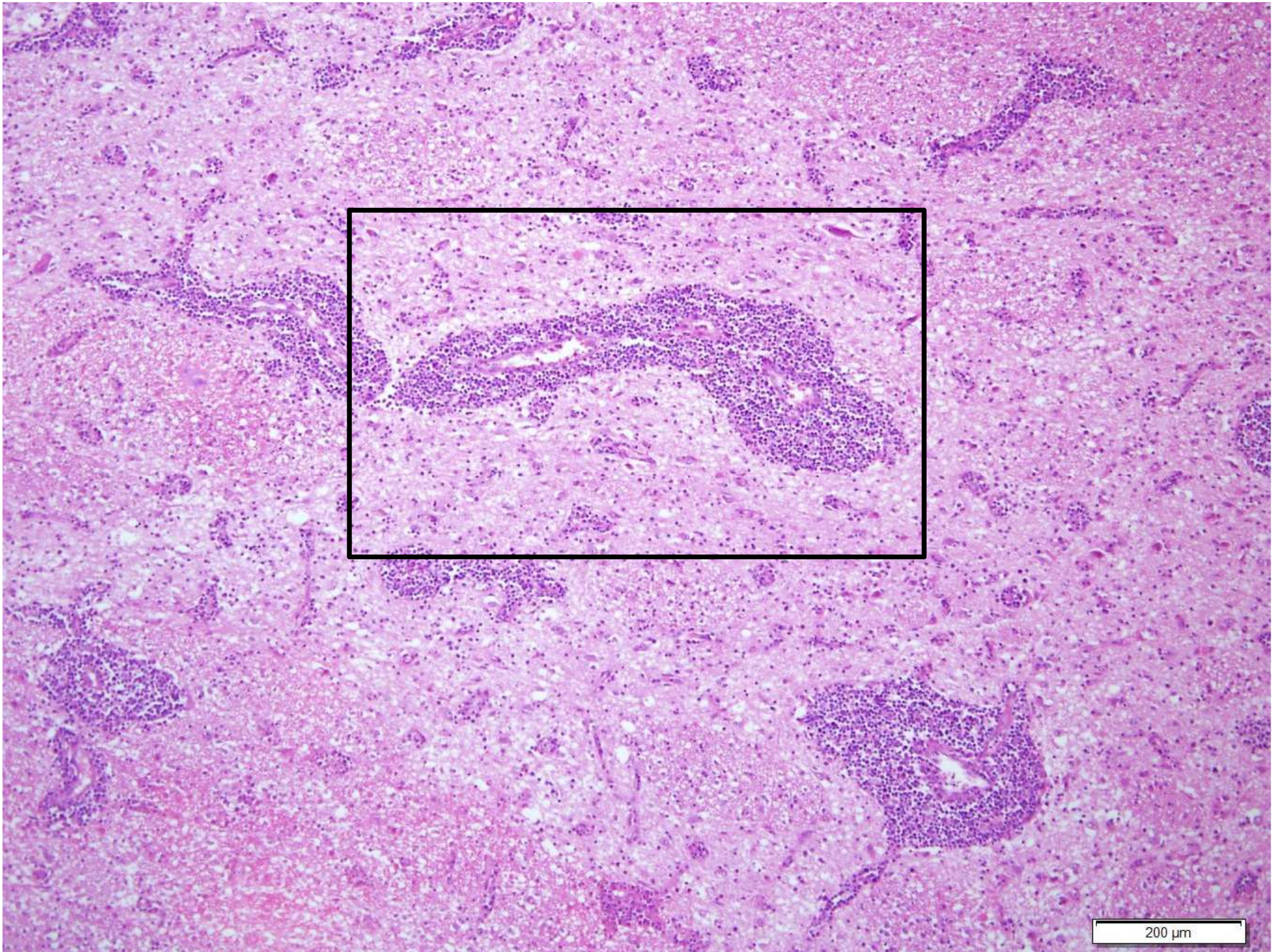
Swine Pathology  
Tilusha Manchanayake

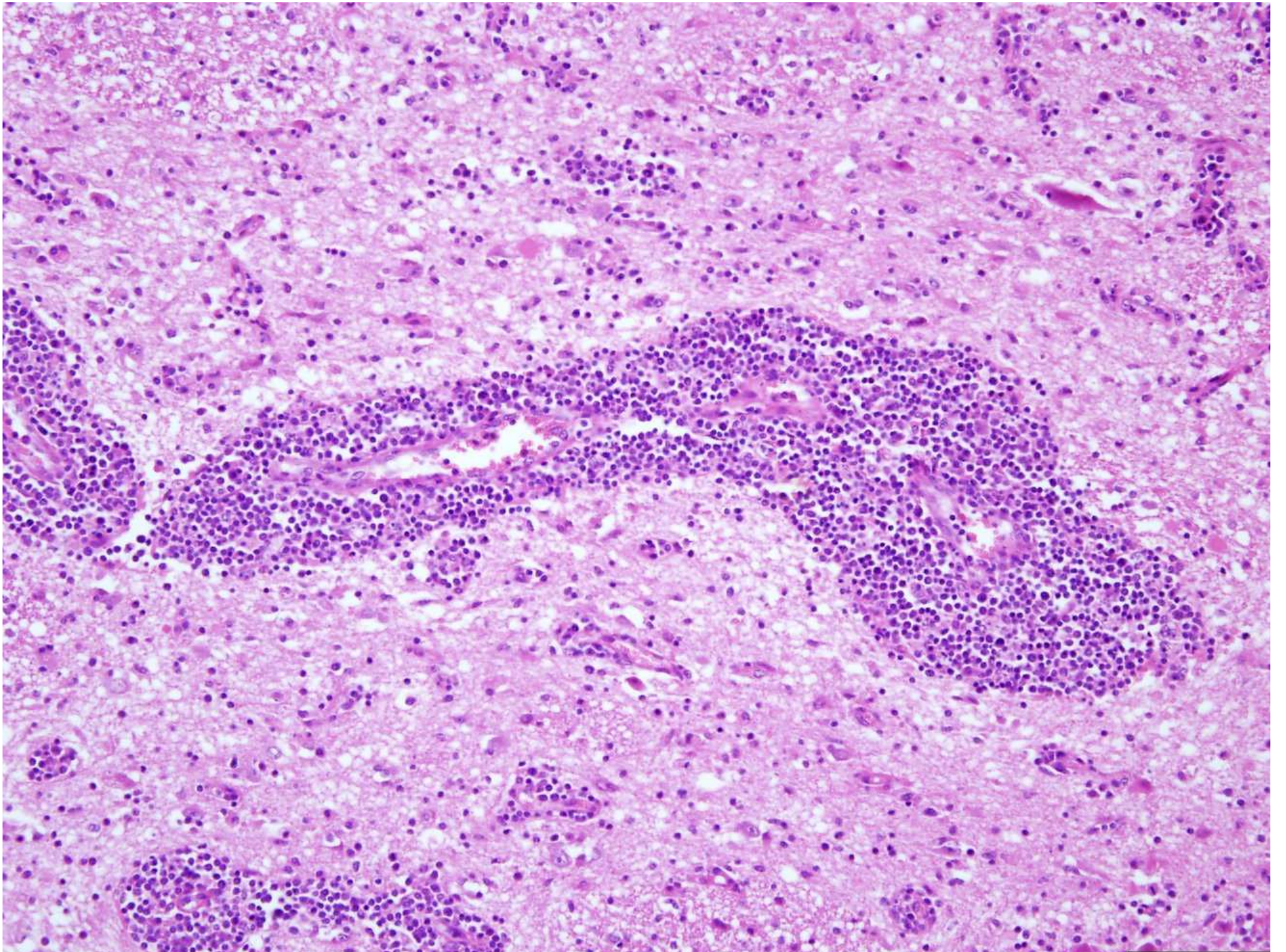
# Thalamus of horse

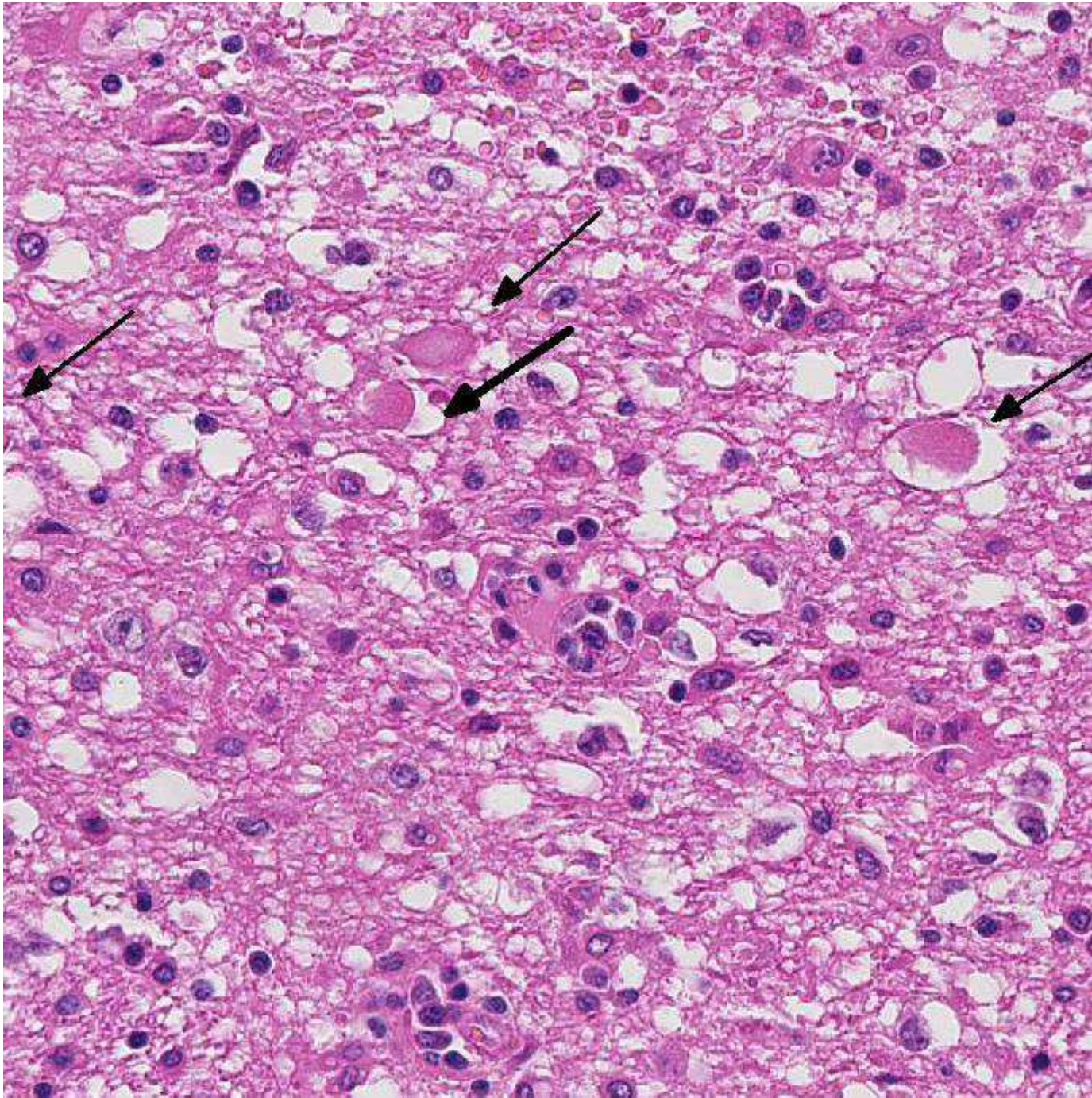
- Contributor** Setor de Patologia Veterinaria, UFRGS
- Signalment** 4-year-old castrated male, crioulo horse (*Equus caballus*)
- History** progressive weight loss, lethargy, incoordination, pallor of mucous membranes, subcutaneous edema ventral portions of trunk & limbs  
**neurological** - blindness, circling, hyper excitability, somnolence, proprioceptive deficits, head tilt, and paddling movements (20 days)
- Gross Pathology** hindquarter muscle atrophy, splenomegaly, lymphadenomegaly  
cerebral hemispheres - asymmetrical swelling with flattening gyri  
parietal, temporal, frontal lobes, } Severe edema &  
basal nuclei, thalamus, mesencephalon } malacia
- Laboratory Results** normocytic normochromic anemia with leukocytosis (lymphocytosis erythrophagocytosis, peripheral blood - *Trypanosoma evansi*, serum - high titers against *T. evansi*)

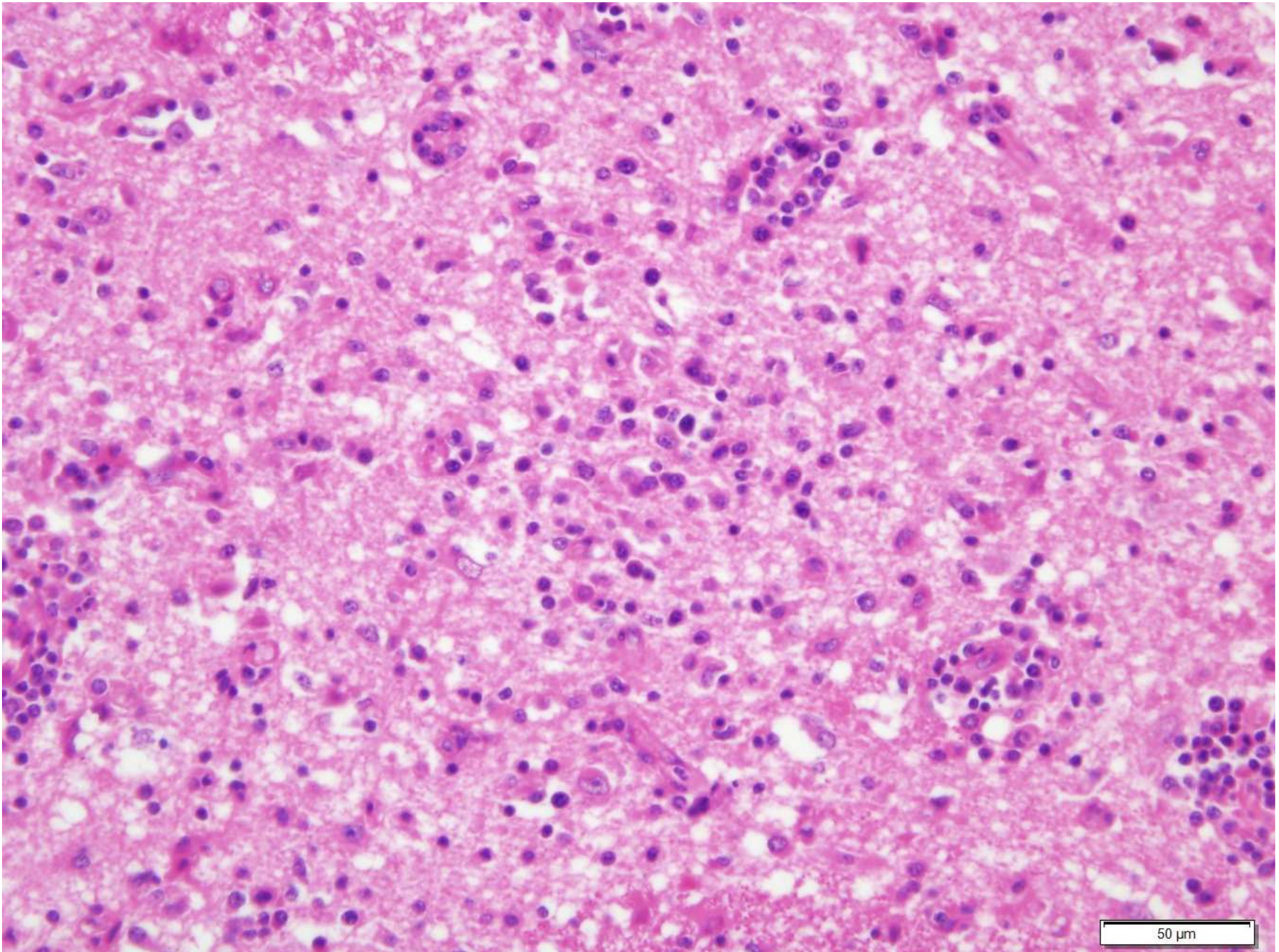












# Contributor's morphologic diagnosis

Lymphoplasmacytic encephalitis, moderate to severe, 4-year-old, castrated male, crioulo, *Equus caballus*, horse

Etiologic diagnosis: Protozoal encephalitis

## JPC diagnosis

Telencephalon: **Meningo**-encephalitis, lymphoplasmacytic and **histiocytic**, diffuse, severe with **vasculitis**, spongiosis and gliosis



## Contributor's comments

- fever, anemia, progressive weakness, loss of body condition, unstable gait
- Natural infection - Neurologic signs occasionally in terminal phase
- Experimental - Mild lymphoplasmacytic meningoencephalitis
- Causes: - transport of infected horses  
- migration of capybaras from enzootic areas

**Sub therapeutic doses of  
diminazene aceturate and  
other antitrypanosomal drugs**



**Severe lympho-plasmacytic  
meningoencephalitis with  
marked edema and necrosis**

**Penetrate blood-brain  
barrier**



**Presence of parasite in brain  
- blood vessels, perivascular  
spaces, parenchyma**

# How do Trypanosoma penetrate blood-brain barrier?

## Mechanism 1

sensory ganglia and circumventricular organs



Incomplete blood-brain barrier

## Mechanism 2

deposition of immune complexes in choroid plexus



increase vascular permeability

## Mechanism 3

Toxins released by parasite



Open intercellular tight junctions of ependymal lining of ventricular system

# Conference comment

## Histopathological lesions :

marked perivascular cuffing, presence of edema, lymphocytes, and macrophages (Gitter cells) expanding Virchow-Robin spaces, lymphocytic infiltration, gliosis, gemistocytes, neuronal degeneration, necrosis in the surrounding neuropil

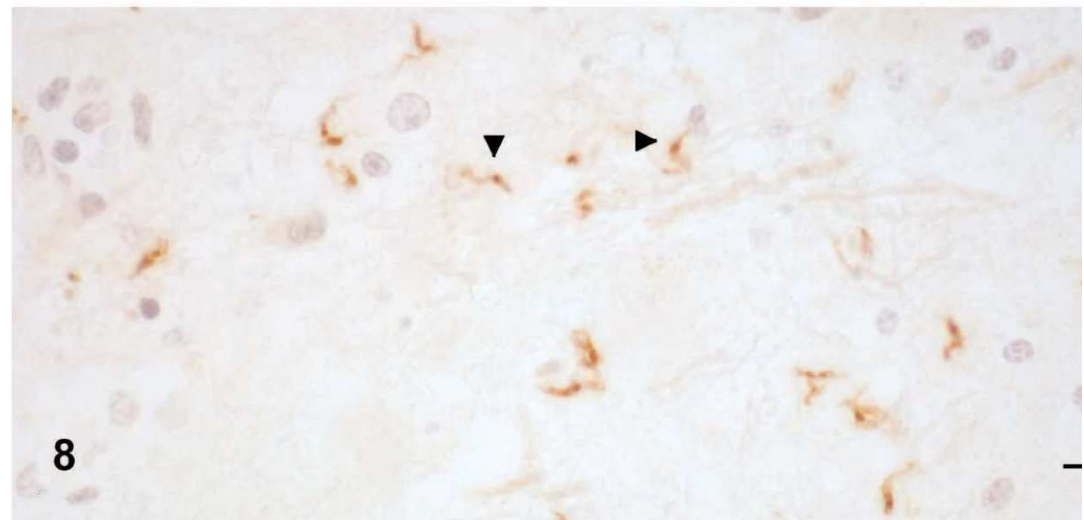
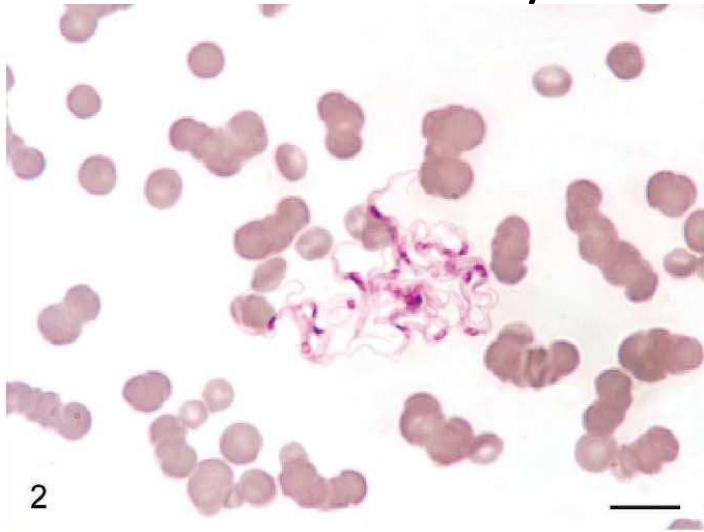
Meninges - lymphoplasmacytic infiltrate and edema

Vasculitis & multifocal hypertrophied endothelial cells (less affected vessels)

Genetic modification of *T. brucei*

Trypanosomes develop mechanisms to avoid immune system and cause immunosuppression

- Modulation of macrophage activity
- Decreased responsiveness of lymphocytes
- Changes in the CD4:CD8 lymphocyte ratio
- Capable of eliminating memory B cells
- Antigenic variation in variant surface glycoprotein (VSG) → constantly redevelop humoral response



Source: <http://ac.els-cdn.com/>