Reg. No: 2015/18/M/NZ6/00414; Principal Investigator: dr hab. Małgorzata Krzyżowska

Herpes simplex virus (HSV) causes a contagious infection that affects approximately 60% to 80% of adults worldwide. HSV-1 is associated mainly with infections of the mouth, pharynx, face, eye, and central nervous system (CNS), while HSV-2 is associated with infections of the anogenital region, although both serotypes may infect both areas. HSV has the ability to invade the central nervous system (CNS), to produce encephalitis. Herpes simplex encephalitis (HSE) predominantly affects children and the elderly, is one of the most common forms of viral encephalitis, and has remarkably poor outcomes despite the availability of good antiviral therapy. More than 70% of patients without treatment die, while 30% with anti-viral treatment. The mahority of patients consequently suffer from epilepsy, mental retardation and chronic neuronal deficits.
The aim of this project is to determine the role of Fas/FasL receptor signalling in pathogenesis of the inflammatory lesions occurring during herpes simplex virus type 1 and 2 (HSV-1/2) infection of the nervous system. In particular, the project addresses the role of Fas/FasL signalling in direct elimination of HSV-1/2 infected cells and elimination of infiltrating inflammatory cells. Furthermore, it also addresses the role of Fas/FasL signalling in mounting specific cytokine and chemokine microenvironment at the site of HSV-1/2 infection. The project involves the use of two murine models of HSV-1 and HSV-2 infection (nasal and genital, respectively) as well as the in vitro culture of mixed microglial cells. The results of this project will help to better understand the mechanisms governing devastating character of herpes simplex virus encephalitis and possibly, other inflammatory conditions of the central nervous system; and to develop new ways of treatment.