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Neuroinflammatory mechanisms of chronic neurodegeneration and cognitive decline following traumatic brain injury (CnsAflame)

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Each year approximately 1.5 million people in the EU are affected by traumatic brain injury (TBI), a disorder caused by external force to the head typically during a traffic or sport accident or a fall. On average 70,000 of these patients, mostly children and young adults, die and 100,000 become disabled. While many lives have been saved in recent years due to improved emergency and hospital care, it has become evident that surviving patients often suffer from various chronic brain disorders, such as epilepsy, depression and progressive dementia for the rest of their lives. Treatments that could tackle these chronic TBI-induced complications (chronic TBI) are currently lacking.

The CnsAflame consortium aims to bring together experienced European TBI researchers to investigate whether, following an initial injury, the brain stays inflamed for the long term; and, if so, whether this chronic inflammation is involved in the above-mentioned chronic complications. The ultimate aim of the project is to determine the underlying causes of chronic TBI to facilitate the development of an effective cure. We will use experimental models of TBI and examine TBI patients with innovative state-of-the- art histological and imaging technologies. We will first monitor the inflammation and degeneration of the brain over months in animal models. We will then investigate how chronic inflammation affects essential brain components in the human brain. Finally, we will block the chronic inflammation of the brain with small molecules and antibody-based drugs in experimental TBI models in order to develop novel treatments for chronic TBI.