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Poster presentation

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Paraneoplastic cerebellar degeneration (PCD) is a neurodegenerative disorder linked to breast and gynecological cancers, characterized by the progressive loss of cerebellar Purkinje neurons and subsequent motor control impairment. This immune-mediated disease is attributed to an interaction between anti-Yo and cerebellar degeneration-related (CDR) proteins in tumor and neural cells. However, the understanding of the overall underlying pathological mechanisms, particularly involving infiltration of various immune cells, remains poorly understood.

Employing imaging mass cytometry (IMC), our research seeks to elucidate the involvement of microglia, the central nervous system's resident immune cells, in the pathogenesis of chronic PCD. Past observations note a typically low microglial density in the cerebellum under normal conditions. As microglia have been found to show detrimental effects in a number of neurodegenerative diseases in past research, we aim to explore changes in microglial localization, function, and activation across three distinct brain areas (frontal cortex, medulla oblongata, and cerebellum) of individuals affected by long-standing PCD. We specifically investigate the reactivity of microglia in proximity to the Purkinje neuron layer within the cerebellum. Through detailed analysis of microglial dynamics and their interactions within the cerebellar microenvironment, we aim to advance our understanding of the immune-mediated processes contributing to PCD progression and its neural ramifications.