



Project title: Unraveling the microglial role in shaping neurogliomal synapses

Partners:

- IBPM-CNR: Nicoletta Corbi
- Camerino University: Maria Beatrice Morelli
- Università La Sapienza: Stefano Garofalo (PI)

nicoletta.corbi@cnr.it



Description:

Glioblastoma multiforme (GBM) is the most aggressive malignancy of the nervous system. The Glioblastoma-Associated Microglia/Macrophages (GAMs) and Natural Killer (NK) cells play a crucial role in the tumor microenvironment (TME) contributing to an immunosuppressive ground. GBM and GAMs develop symbiotic interactions that promote GBM cell proliferation, survival, and migration, and NK cells shape GAM phenotype. It is established that astrocytes and microglia are involved in the control of neuronal activity and synaptic neurotransmission, in the tripartite synapses. Nevertheless, their role in the neurogliomal synapses remains unexplored. We intend to investigate novel mechanisms that supports the pro-tumorigenic TME, seeking a strategy to counteract it.

Aims:

GBM shapes microglial functions and NK activity in a pro-tumoral way and builds up neurogliomal synapses with peri-tumoral neurons. Our goal is to unravel the role of NK cells and microglia in neuron-glioma cell communication, investigating the molecular signals that boost these synapses in the GBM context. The role of cannabinoid system will be also investigated to identify pathways that mediate microglial/NK effect(s) on neurogliomal synapses.

Expected results:

Morphological and functional studies focused on neurogliomal synapses will be performed in both human and murine models. We will combine different expertise in the field of oncology, neuroscience, adenoassociated virus (AAV) and RNA technology, pointing to the identification of novel GBM cellular and molecular therapeutic targets.

Funded by the European Union – Next Generation EU, M4C2 – CUP B53D23018330006