

## **Brain/Tumor Crosstalk in Cerebral Cortex**

### *Studies of small- and large-scale cerebral network functioning in peritumoral cortex from human and mouse*

1. Low grade glioma and associated seizures cause damage to large scale brain networks; specific nuclei and the cerebellum suffer structural and functional alterations because of this effect and contribute to the range of neurocognitive symptoms seen in patients. *[this thesis]*
2. All infiltrative brain tumors can eventually lead to epileptic seizures, if the brain gets enough time. *[this thesis]*
3. Perioperative *ex-vivo* electrophysiological recordings provide a set of tools to identify specific clinical and subclinical alterations in individual brain tumor patients that may lead to new biomarkers for tumor associated epilepsy. *[this thesis]*
4. In brain tumor patients where PDS complexes are found, close clinical monitoring should be applied during follow-up to detect and treat post-surgical seizures as early as possible. *[this thesis]*
5. Despite the important contribution of stem cell modeling to psychiatric disease pathophysiology, these findings should undergo replication studies using primary brain tissue to further evaluate their validity. *[this thesis]*
6. While the molecular mechanisms by which neural cells influence cancer cells vary by tissue type, one unifying principle is that the functional effect of the neural-cancer interaction can typically be predicted by the influence of nervous system elements on the normal cellular counterpart of a given cancer. *[Monje et al, Roadmap for the Emerging Field of Cancer Neuroscience. Cell 2020, 181(2), 219-222]*
7. In fact, each tumor induces specific modifications of the brain functional network, with high interindividual variability. This requires that each treatment plan is tailored to the characteristics of the tumor and of the patient. *[Bertani et al, Intraoperative mapping and monitoring of brain functions for the resection of low-grade gliomas: technical considerations. Neurosurg Focus. 2009 Oct;27(4):E4.]*
8. Elucidation of the interplay between normal and malignant neural circuitry is critical to realizing the promise of effective therapies for these seemingly intractable diseases. *[Gillespie et al, An active role for neurons in glioma progression: making sense of Scherer's structures. Neuro-Oncology 2018, 20(10), 1292–1299]*
9. To realize the relative validity of one's convictions and yet stand for them unflinchingly is what distinguishes a civilized human from a barbarian. *[Joseph Schumpeter, Capitalism, Socialism and Democracy, p. 243 (1943)]*
10. Whenever we can replace human judgment by a formula, we should at least consider it. *[Daniel Kahneman, Thinking, Fast and Slow (2011)]*
11. Education is an admirable thing, but it is well to remember from time to time that nothing that is worth knowing can be taught. *[Oscar Wilde]*