TITLE: MUNCH – Multimodal Neuroimaging in Healthy Subjects and Neurological patients as a biomarker of healthy and abnormal brain functions.

ABSTRACT: Neuroimaging has profoundly advanced neuroscience research and clinical care rapidly in the past two decades. Multimodal neuroimaging advances the neuroscience research by overcoming the limits of individual imaging modalities and by identifying the associations of findings from different imaging sources. Since different approaches can reveal different physiological relation between the complex functionality aspects of the human brain in healthy and neurological conditions, the whole project can be divided in the following four subprojects:

Project 3 (PI: Bertoldo; co-PI: Corbetta, Vallesi, Cagnin, D'Avella; External: Cecchin, Della Puppa): Neuroimaging of brain tumor for improving neurological outcome and surgical planning

The main goal of this project is to create a new strategy for brain surgery based on a deeper understanding of the effects of the tumour on the surrounding and distant brain tissue, as well as on behaviour. We are carrying out simultaneous metabolic and structural/functional MRI studies on a longitudinal cohort of patients with brain tumours studied pre- and post-surgery (1 week, 1 month). Brain imaging features and behavioural outcome will be related using state-of-the-art machine learning methods that 'select' the most important neuroimaging features for behavioural prediction. These features will be used in a new neuro-navigation protocol as part of clinical care. In the course of these studies, we will also learn fundamental new information on the effects of tumours on the physiology, anatomy, and vascular systems of the brain.

PARTICIPANTS (PI and co-PIs): PI: Alessandra Bertoldo, co-PI: Maurizio Corbetta. Additional: Antonino Vallesi, Annachiara Cagnin, Domenica D'Avella. External: Diego Cecchin, Alessandro Della Puppa

EXPERIMENTAL DATA:

To be acquired	x
Already acquired (ready to be used)	x

Ethics committee:

Obtained	x
Conditioned submission*	Expected time response (in months):
Not required	

* request will be submitted only if a PhD student will be associated to the project