Título del Proyecto	**Multiparametric MR approaches for non-invasive Glioblastoma therapy response follow-up - MAGRes**
Nº de expediente asignado	GA: 777222
Abstract	Glioblastoma (GB) is the major aggressive primary brain tumour in adults showing disproportion between high mortality compared to low overall incidence. Survival after detection is below 18 months even after standard aggressive treatment and no cure has been reported. Novel therapies (e.g. immunotherapy) may be very expensive and it may be relevant to have in vivo, early efficiency, non-invasive imaging biomarkers (IB) to halt unsuccessful use of such therapeutic agents and allowing early evidence-based therapy-related decisions. We believe that Magnetic Resonance (MR)-derived data (MRI, MRSI, i.e. imaging, spectroscopic imaging) can be translated into IB of successful GB therapy through in vivomonitoring. MAGRes proposes a breakthrough innovative hashtag combining MRI and MRSI data acquisition. MRSI data will be used as decoding agent to translate MR-derived information into surrogate IB of successful therapeutic outcome, which definitely represents a step beyond in comparison with present follow-up therapy response strategies based in volume changes of the tumour mass. The extremely large amount of multi-parametric data acquired for each preclinical subject (mice), longitudinal explorations

	with several acquisitions will allow us to benefit from powerful state-of-the-art multiparametric data analysis methods based on Deep-Learning (DL). This, together with feature selection and interpretation methods will lead to extraction of MR-based significant IB. At present, there is no software approach allowing both fast, user-friendly post-processing of conventional MRI and MRSI, and encompassing sophisticated developments in the area of pattern recognition (PR), automated MRSI artifact removal, as well as the weighted combination of multi-parametric images. Accordingly, MAGRes targets the development and implementation of user-friendly software with capabilities to compute 2D and 3D MR-derived parametric images and to visualise them overlaid on high resolution MR structural images. Moreover, this will be implemented in an open-source software imaging platform as a plugin, paving the way to a scalable system, which could also handle clinical patient data in the immediate future.
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