increasing both its specificity and sensitivity of detecting one or multiple antigen(s) (Ag) simultaneously. As such, IHC has become an affordable, powerful, and readily available means for the identification of candidate biomarkers (mostly lineage markers) in formalin-fixed, paraffin-embedded (FFPE) tissue samples. Pathologists are now asked to "quantify" expression levels of differential prognostic markers –at microscopic level – using this arguably "non-quantitative" technique. Conventionally, histological grading relies mainly on manual counting of positively immunostained cells, a labour intensive protocol that may be associated with subjectivity, intra- and inter- observer variation and reproducibility issues. The subjectivity and lack of reproducibility has prompted the use of computer-assisted or fully automated image analysis technologies. Digital image acquisition systems are becoming commonplace and as such, the demand for complex assessments of digital images of histological slides must be matched with quantitative platforms. In this study, we aim to introduce a computer-assisted image-computing platform that is both accurate and efficient in quantification of isolated and heterogeneous candidate biomarkers in glioblastoma.

IMAGING

PS2 – 196

Investigating the Spatial Agreement Between Pre-Operative Functional MRI and Intra-Operative Direct Cortical Stimulation

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Pre-operative functional magnetic resonance imaging (fMRI) has emerged as valuable clinical tool to help surgically manage patients diagnosed with brain tumours. Surgical decision-making may be significantly improved through the provision of fMRI, however its clinical usage is contingent on the level of agreement with direct cortical stimulation (DCS). While previous studies have been undertaken to investigate the spatial agreement between fMRI and DCS, the influence that various factors may have on fMRI sensitivity and specificity is not fully clear. Thus, in a group of eight brain tumour patients who underwent pre-operative fMRI followed intra-operative DCS during an awake craniotomy procedure, we measured the agreement between the two brain mapping techniques looking at the influence of behavioural task, statistical threshold, and task standardization. Results: There were significant differences between motor and language mapping, where agreement was better for the former. Sensitivity and specificity shared an inverse relationship with increasing fMRI threshold, and were significantly reduced in the case where tasks were not standardized. Lastly, false positive occurrences were identified as the dominate source of error in comparison to false negative occurrences. Conclusion: Thus, the results from this work suggest that fMRI can predict intraoperative findings with good accuracy, however, sources of variability may significantly reduce the quality of fMRI data at the single-subject level. Neurosurgeons should carefully evaluate fMRI data with these considerations prior to its inclusion in the surgical-decision making process.

CLINICAL POSTER VIEWING SESSION III
11 JUNE 2016 ~ 1000 - 1045

GLIOMA CLINICAL

PC3 – 151

Toca 5: A Phase 2/3 Randomized, Open-Label Study of Toca 511, a Retroviral Replicating Vector, Combined with Toca FC versus Standard of Care in Patients Undergoing Planned Resection for Recurrent Glioblastoma (GBM) or Anaplastic Astrocytoma (AA) (NCT02414165)

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Recurrent GBM and AA have a dismal prognosis and a high unmet need for effective therapies. Toca 511 (vocimagene amiretrorepvec) is an investigational retroviral replicating vector that encodes the transgene cytosine deaminase (CD). Toca 511 selectively infects, persists and spreads in tumor. Subsequent oral administration of 5-fluorocytosine (Toca FC) produces 5-fluorouracil (5-FU) by CD within infected cells. 5-FU kills cancer cells and myeloid derived suppressor cells, inducing robust antitumor immune responses in animal models. Clinical data from phase 1 trials are consistent with this mechanism of action, and show extended survival compared to historical controls. Toca 5 is a multicenter, randomized, open-label Phase 2/3 trial of Toca 511 and Toca FC versus standard of care administered to patients undergoing resection for first or second recurrence of GBM or AA. Phase 2 will enroll 170 patients. Primary endpoint is overall survival (OS). Key secondary endpoints are safety, objective response rate, clinical benefit rate, progression-free survival, and landmark OS. Key inclusion criteria are age 18-75 years, histologically proven GBM or AA, measurable disease preoperatively of less than 5cm, candidate for equal or greater 80% resection of enhancing tumor based on pre-operative evaluation, and KPS equal or greater to 70. Assays for immune monitoring will be performed and molecular profiling of resected tumor samples will be correlated efficacy.

PC3 – 152

Impact of Extent of Resection Upon Outcome in Newly Diagnosed Glioblastoma: A Study in the Molecular Era

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For decades, debate has persisted regarding the role of surgical resection in newly diagnosed glioblastoma. There is increasing evidence that extent of resection (EoR) is an independent prognostic factor. Previous work has proposed the inclusion of EoR in a risk stratification algorithm but does not incorporate