IMAGING ENDPOINTS
CONNECTING IMAGING TO THE CURE

EXPERIENCE WITH CNS TUMORS SUCH AS GLIOBLASTOMA MULTIFORME

Imaging Endpoints is an imaging research and core lab owned in-part by our 44 radiologists and Scottsdale Healthcare (one of the top 50 healthcare systems in the USA). Our parent company has a strong healthcare relationship with Barrow Neurological Institute, a world leading institution in brain cancer research. We provide comprehensive imaging expertise, translational and clinical research services and core lab reads for clinical trials of all types.

Several of our radiologists have appointments at major academic institutions such as University of California at San Francisco, Yale, Stanford, Mayo Clinic and Brigham and Women's Hospital. In particular, we have 8 fellowship-trained neuroradiologists who provide direct scientific and trial design advice and services to sponsors who desire our core Neuroimaging lab services. As a group, our neuroradiologists have extensive imaging experience with CNS malignancy imaging backed up with scientific publications and presentations at major Neuroradiology meetings. Two of your current radiologists have come from Barrow Neurological Institute. The following experience makes us well suited to provide imaging research and comprehensive core lab services during clinical trials in CNS malignancies:

1. Primary focus on oncology (CNS and non CNS tumors) using advanced imaging analysis with PET and MRI imaging, textural analysis and radiogenomic analysis, (including the evaluation of response, pseudoprogression and pseudoresponse) using:
    - Arterial Spin Imaging MRI
    - Ferumoxytol Imaging for MRI
    - BOLD MRI
    - PET Imaging with FDG
    - PET Imaging with 11C-methionine (especially in pediatric patients)

2. Lead neuroradiologist
    - William F. Jones, MD
    - William W. Horsley, MD FACR
    - William H. Taylor, MD, PHD
    - Christopher Hess, MD PhD
    - Steven Wise MD
    - Michele Lai MD

3. Current ongoing trials with CNS elements
    - Prediction of chemobrain with Textural analysis
    - Prediction of metastatic CNS metastasis in small-cell lung cancer

EXPERIENCE WITH CNS TUMORS SUCH AS GLIOBLASTOMA MULTIFORME (Cont.)

4. Exploratory Imaging Services to Probe Biology and Quantitate Response
    - Our Rapid Detection and Assessment of Response program (RaDAR) is designed to accelerate product development by integrating new, more powerful imaging technologies into clinical trials.
        - Integrate novel imaging with biologic, clinical & lab data to measure response, support mechanism-of-action, predict responders/non-responders
    - Advanced Imaging Analysis with exclusive use of textural analysis software platform which is revolutionizing the way images are evaluated so that complex biological processes can be measured on standard imaging modalities of MRI, PET and CT.

5. Specific neuro-oncology publications and presentations include:
    - Lupo JM, Chuang CF, Chang SM, Barani IJ, Jimenez B, Hess CP, Nelson SJ. 7 tesla susceptibility weighted imaging to assess the effects of radiotherapy on normal appearing brain in patients with glioma. Int J Radiat Oncol Biol Phys 82: 493-500, 2011.
    - Lubo JM, Chuang C, Jimenez B, Chang SM, Barani IJ, Hess CP, Nelson SJ. Assessing the effects of radiation on normal brain tissue in patients Proc 16th ISMRM (Stockholm), p. 620, 2010.
    - Cohen BA, Barajas RF, Yu J, Von Morze C, Hess CP and Cha S. Super resolution track density imaging of white matter signal abnormality in suspected recurrent high grade glioma. Proc 50th ASNR (New York, NY), p 100, 2012.
    - Barajas RF, Hess C, Yu J, Phillips J, Von Morze, and C Cha S. Super resolution track density imaging: initial clinical experience and biological correlation with Glioblastoma multiforme. Proc 50th ASNR (New York, NY), p 292, 2012
    - Arora S, Ranade AR, Tran NL, Nasser S, Sridhar S, Korn RL, Ross JTD, Dhruv H, Foss KM, Sibenaller Z, Ryken T, Gotway MB, Kim S, Weiss GJ,:MicroRNA-328 is associated with non-small cell lung cancer (NSCLC) brain metastasis and mediates NSCLC migration Int. J. Cancer 2011, 29(11):2621-31.

6. Advisory Experts
    - David Sidransky MD, Director of the Head and Neck Cancer Research Division at Johns Hopkins University School of Medicine and Professor of Oncology, Otolaryngology, Cellular & Molecular Medicine, Urology, Genetics, and Pathology at John Hopkins University and Hospital.
    - Michael Berens Ph.D. serves as the Head of the Brain Tumor Research Lab and Director of the Cancer and Cell Biology Division at the Translational Genomics Research Institute (TGen).

7. Strategic Partnerships:
    - TGEN and TD2 and their team of scientists devoted to preclinical models of CNS Tumors - lead by Michael Berens PhD.
    - Champions Oncology and their extensive H&N Tumorgraft models (patient derived tumors) and experience in testing and developing H&N cancer drugs and vaccines.

In short, our team of in-house imaging experts, partnerships with leading researchers in neurological sciences and global core lab services with fully validated 21 CFR part 11 compliant systems makes our core lab mission driven and business minded to provide you with the needed attention that your clinical studies deserve.