

Small Animal PET Imaging

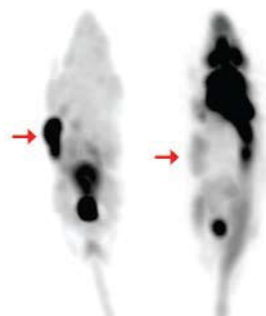
Discovery and Imaging Expertise

Molecular Imaging offers substantial expertise in *in vivo* imaging. With decades of combined experience, our staff offers *in vivo* PET study design, execution and data analysis across a broad spectrum of disease models. Our imaging experts work side-by-side with our own discovery and disease area experts to design and execute studies. Imaging protocols and data analyses are designed for maximal clinical relevance and statistical power.

Our expertise in the optimization of animal imaging throughput and data quality enables the efficient and cost-effective acceleration of drug development.

Molecular Imaging Expertise

- Broad expertise across multiple disease models leveraged with substantial preclinical PET expertise
- Extensive experience using 18-FDG and 18-FLT PET in a broad panel of oncology models
- Optimization of throughput (40+ animals per day; 300+ scans per study)
- Optimized tracer uptake procedures to maximize statistical power
- Automation for logging and tracking timing for fasting, dosing, uptake and image acquisition
- Automated dose-corrected SUV calculation
- Dynamic uptake scanning and PK modeling
- Highly trained and skilled imaging scientists who design and undertake studies



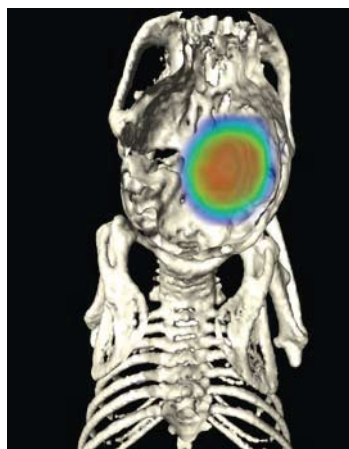
18F-FLT and 18F-FDG PET scans in subcutaneous HCT-116 tumors (indicated by arrows). As the images highlight, FLT shows significantly greater uptake in many mouse tumors and lower normal tissue uptake (background), and can therefore be a more sensitive and specific biomarker for antitumor efficacy than FDG.



Client Focus

Preclinical programs can experience significant delays or bottlenecks when the associated *in vivo* imaging studies are conducted through an academic collaboration, as throughput, prioritization and intellectual property rights can be major concerns.

When working with Molecular Imaging, PET studies are performed on our own Siemens Inveon equipment by our expert staff. We guarantee model behavior for a broad array of validated models. Our imaging staff collaborates closely with you to better understand your development program needs and guide all aspects of study design, including tracer, model and imaging time point choices.

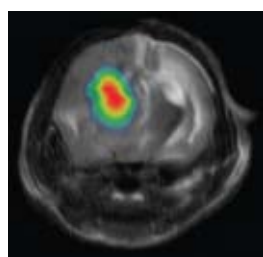


18F-FLT image of an intracranial human tumor in a mouse.



Small Animal PET Imaging of Therapeutic Response

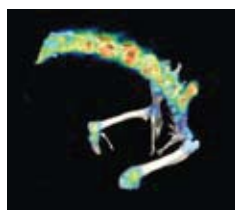
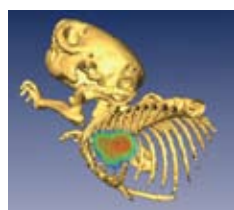
Positron emission tomography (PET) is increasingly used to study disease states *in vivo* for preclinical drug discovery. PET radioisotope tracers can be used to measure glucose metabolism ([¹⁸F]-fluorodeoxyglucose, ¹⁸F-FDG), cellular proliferation ([¹⁸F]-fluoro-thymidine, ¹⁸F-FLT and [¹⁸F]-FMAU), hypoxia (¹⁸F-MISO, ¹⁸F-FAZA) and bone metabolism (¹⁸F-NaF). Tumor detection and therapeutic monitoring using preclinical PET takes advantage of differential uptake of these tracers in tumors (or bone) and change in uptake with treatment response.



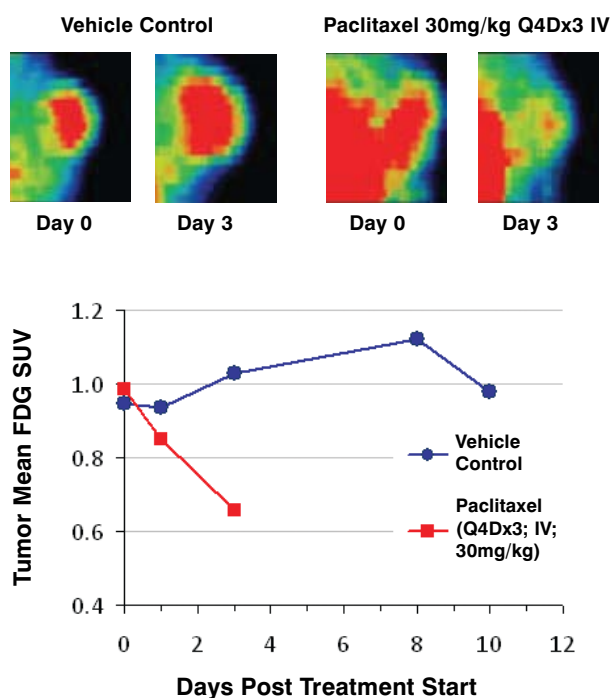
Multi-modality imaging (FLT PET + MRI) in intracranial glioma. Combined PET and MRI enables functional PET-based endpoints with simultaneous tumor burden tracking in deep tissue tumor models.

Clinical Translation and Biomarker Validation

PET is used in clinical trials to track disease progression and response in oncology (primary tumors and metastases) and cardiovascular, CNS and inflammation diseases. We utilize clinically translatable protocols that can be used for biomarker validation and preclinical efficacy testing. Preclinical PET can be used to determine feasibility and guide clinical trial design.



Left: ¹⁸F-FLT PET/CT image of subcutaneous A2780 tumor. Right: ¹¹⁸F-NaF PET/CT image in a rat osteoporosis model.



FDG uptake response in Colo-205 xenografts. By Day 3, after a single dose of paclitaxel, the tumors show significant decrease in FDG uptake despite no difference in tumor size at that time, compared with controls (see graph and images above).

Reports

Clients receive weekly data updates during each study. A full report, including complete tabular dataset, time course graphics and statistical analyses, is issued within five weeks of completion of the *in vivo* portion of a PET study. Clients receive all raw pharmacology and image data from their studies, including image viewing and analysis software.