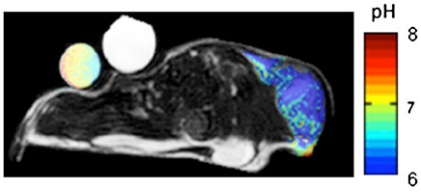
THIS MONTH IN

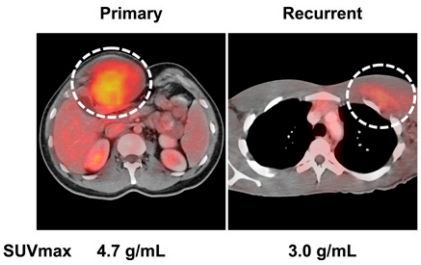
# JNM

**Measuring tumor pH:** Zhang and colleagues review the most recent advances in in vivo assessment with pH-sensitive PET radiotracers, MR spectroscopy, and MR and optical imaging. . . . . ***Page 1167***




**Beyond ejection fraction:** Matsunari and colleagues provide an overview of current indications for implantable cardioverter defibrillators and describe the potential and challenges of $^{123}$I-MIBG imaging in predicting adverse events in patients after implantation. . . . . ***Page 1171***

**PET/CT in soft-tissue sarcomas:** Benz and colleagues explore the utility of $^{18}$F-FDG PET/CT in correlating glycolytic phenotype and tumor grade in soft-tissue sarcomas and discuss potential contributions to sarcoma grading and targeting of biopsy sites. . . . . ***Page 1174***

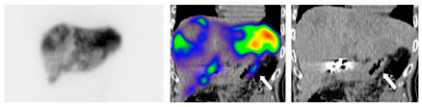



**Phase alignment in cardiac PET/CT:** Wells and colleagues evaluate a method to improve conventional realignment in cardiac PET/CT by acquiring a respiration-gated PET scan and separately aligning the 3D CT scan to each phase of the PET study. . . . . ***Page 1182***

**GLUT1 polymorphism and tracer uptake:** Grabellus and colleagues investigate the relationship between single-nucleotide polymorphisms in the glucose transporter 1 gene and uptake of $^{18}$F-FDG and tumor aggressiveness in breast cancer. . . . . ***Page 1191***

**PET/MRI and intracranial masses:** Boss and colleagues study the feasibility of tumor assessment of intracranial masses using a hybrid PET/MRI system that promises spatial and temporal coregistration of structural, functional, and molecular data. . . . . ***Page 1198***

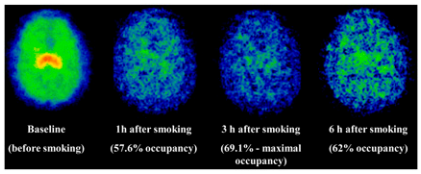
**SPECT/CT planning for SIRT:** Ahmadzadehfar and colleagues compare $^{99m}$Tc-macroaggregated albumin SPECT/CT with planar imaging and SPECT in detection and localization of extrahepatic $^{99m}$Tc-MAA accumulation and evaluate the impact of SPECT/CT on selective internal radiation therapy planning. . . ***Page 1206***



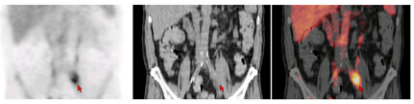
**Imaging and CTC counts in bone metastases:** De Giorgi and colleagues compare the predictive significance of $^{18}$F-FDG PET/CT findings and circulating tumor cell count in patients with bone metastases from breast cancer treated with standard systemic therapy. . . . . ***Page 1213***

**Intraoperative real-time imaging:** Vidal-Sicart and colleagues assess the value of a combination of a standard hand-held γ-probe and real-time imaging with a portable γ-camera in improving intraoperative detection in patients with difficult sentinel node localization assessed by presurgical lymphoscintigraphy. . . . . ***Page 1219***

**Smoking-induced occupancy of $\beta_2$-nAChRs:** Esterlis and colleagues use $^{123}$I-5-IA SPECT to measure nicotine occupancy and nondisplaceable binding to nicotinic acetylcholine receptors in healthy smokers after satiety. . . . . ***Page 1226***



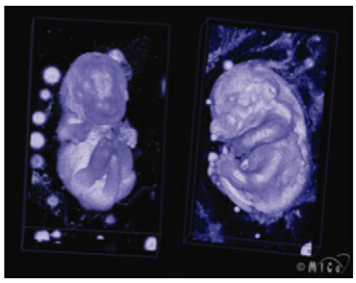

**PET and infection:** Vos and colleagues investigate whether $^{18}$F-FDG PET/CT can detect metastatic infectious foci in gram-positive bacteremia and whether such detection enhances clinical outcomes. . . . . ***Page 1234***



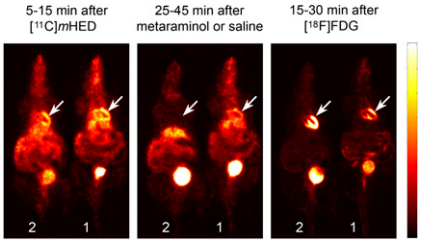
**Predicting ICD adverse events:** Nishisato and colleagues examine whether impairment of cardiac sympathetic innervation and myocardial perfusion as assessed by $^{123}$I-MIBG and $^{99m}$Tc-tetrofosmin imaging can predict lethal arrhythmic events in individuals implanted with cardiac defibrillators. . . . . ***Page 1241***

**PET and parkinsonism progression:** Yagi and colleagues use PET assessment of changes in the brain dopaminergic system to identify pathophysiologic characteristics associated with early conversion from unilateral to bilateral parkinsonism. . . . . ***Page 1250***

**Collaboration on molecular imaging probes:** Valliant highlights areas in which molecular imaging, in conjunction with probe development, new imaging technologies, and multidisciplinary collaborations, can have significant effects on health care and basic science. . . . . ***Page 1258***

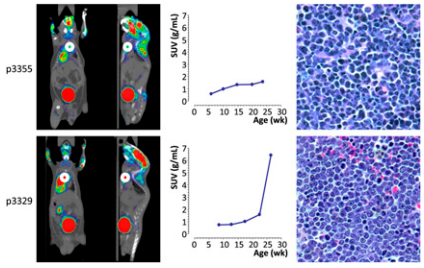


**$^{11}$C-*m*HED and PET:** Law and colleagues describe the use of this PET tracer to resolve difficulties in imaging sympathetic nervous system dysfunction in mice and to visualize and assess experimental myocardial innervation. . . . . ***Page 1269***

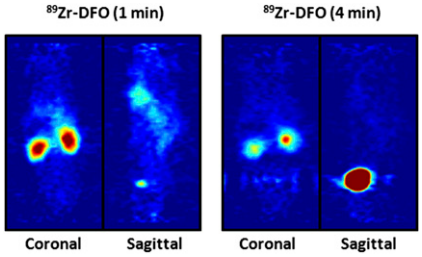



**Cardiac PET/MRI in mice:** Büscher and colleagues evaluate the suitability of a prototype preclinical PET/MRI system for simultaneous assessment of cardiac metabolism and function in mice. . . . ***Page 1277***

**PET/CT in *Trp53*$^{-/-}$ mice:** Walter and colleagues assess the utility of small-animal PET/CT for monitoring disease development and response to chemotherapy of thymic lymphoma in a transgenic mouse model. . . . . ***Page 1285***

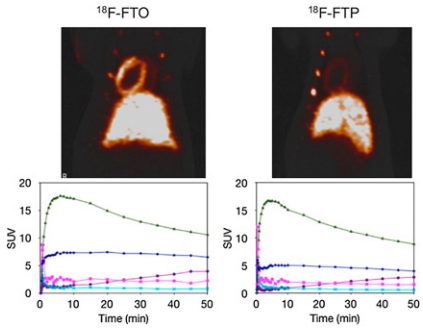



**ImmunoPET of PSMA:** Holland and colleagues report on the preparation of and initial studies with $^{89}$Zr-DFO-J591, a novel monoclonal antibody construct for targeted immunoPET and quantification of prostate-specific membrane antigen expression in vivo. . . . . ***Page 1293***

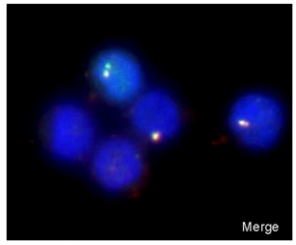



**TSPO ligands in infarcted brain:** Yui and colleagues evaluate the kinetics of two $^{18}$F-labeled translator protein ligands and describe the results of their application in imaging neuroinflammation in the infarcted rat brain. . . . . ***Page 1301***

**$^{18}$F-oleate as fat oxidation probe:** DeGrado and colleagues investigate a novel tracer developed to assess fatty acid oxidation and discuss the implications for enhancing scientific understanding of a range of cardiovascular, oncologic, neurologic, and metabolic diseases. . . . . ***Page 1310***




**DNA repair after $^{131}$I therapy:** Lassmann and colleagues study the induction, persistence, and disappearance of radiation-induced γ-H2AX and 53BP1 foci after $^{131}$I therapy and review the potential of these foci as markers for radiation exposure after radionuclide incorporation. . . . . ***Page 1318***




## ON THE COVER

These images of a meningioma patient were created by fusing T2-weighted MR images with $_{68}$Ga-DOTATOC PET images. A small frontal satellite lesion is clearly visible and was included in the irradiation field. Structural, functional, and molecular imaging in patients with brain tumors is feasible with hybrid PET/MRI, which offers many advantages over PET/CT and produces comparable image quality and quantitative data.

See page 1202.