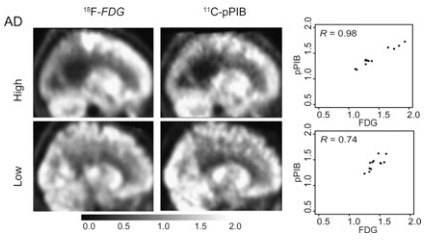
Imaging tumor hypoxia: Chitneni and colleagues focus on molecular imaging of hypoxia, reviewing recent advances in optical and PET approaches. . . . . ***Page 165***

Assessing liver function: Gholam and Lee look at the challenges of quantitative measurement of liver function and preview an article in this issue of *JNM* comparing nuclear imaging techniques.. . . . . ***Page 169***

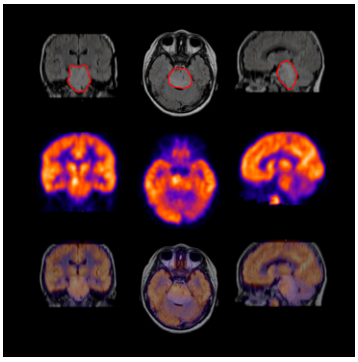
Standardizing quantitative imaging: Buckler and Boellaard discuss the need for collaborative efforts to make imaging results widely comparable across institutional and geographic barriers and introduce 2 articles in this issue of *JNM* contributing to this effort. . . . . ***Page 171***

Early PIB perfusion: Rostomian and colleagues investigate whether early frames of ^{11}C-Pittsburgh compound-B PET data can provide information reflecting perfusion and correlating with ^{18}F-FDG PET and cognitive status in patients with Alzheimer disease or frontotemporal lobar degeneration. . . . . ***Page 173***



PET and neck lymph nodes: Liao and colleagues evaluate the sensitivity and specificity of ^{18}F-FDG PET in detection of neck lymph node metastases and in pretreatment risk stratification in patients with oral cavity squamous cell carcinoma.. . . . . ***Page 180***

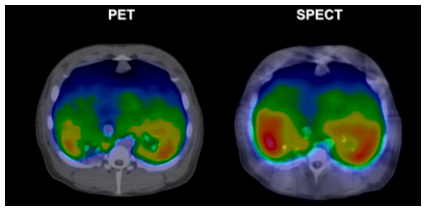
PET and MRI in brain stem glioma: Zukotynski and colleagues assess ^{18}F-FDG uptake in children with newly diagnosed diffuse intrinsic brain stem glioma and correlate imaging results with survival data and MR diffusion imaging data. . . . . ***Page 188***



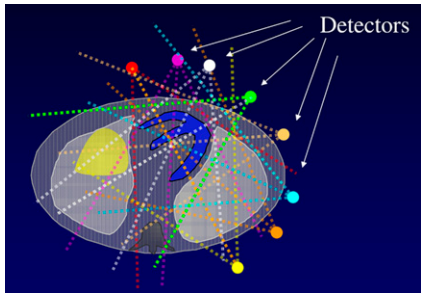
CT attenuation correction for MPI: Pazhenkottil and colleagues determine the impact of attenuation correction with CT on the prognostic value of SPECT myocardial perfusion imaging in patients with known or suspected cardiac disease.. . . . . ***Page 196***

^{11}C-MET in the young brain: Nagata and colleagues determine the uptake of ^{11}C-methionine in the normal brain of patients younger than 20 y and note differences that can be referenced to provide more accurate PET diagnoses in young patients. . . . . ***Page 201***

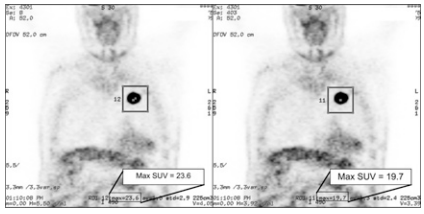
Assessing ventilation distribution: Borges and colleagues compare PET using ^{68}Ga-labeled pseudogas (Gallgas) with standard SPECT using Technegas in a porcine model with different degrees of ventilation inhomogeneity. . . . . ***Page 206***



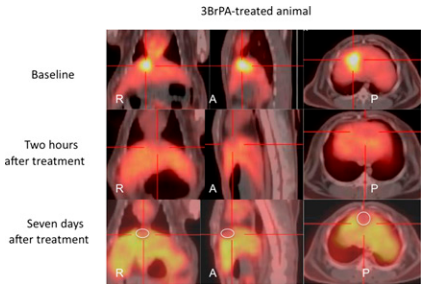
Cardiac camera update: Garcia and colleagues provide an educational overview and comparison of new solid-state ultrafast cardiocentric imaging devices and conventional dual-detector rotating SPECT cameras and describe current clinical trials with the newer devices. . . . . ***Page 210***



SUV variation from calibrations: Lockhart and colleagues measure errors introduced by regular calibration of PET/CT scanners and introduce procedures to minimize the effect of calibration error on standardized uptake value assessments.. . . . . ***Page 218***



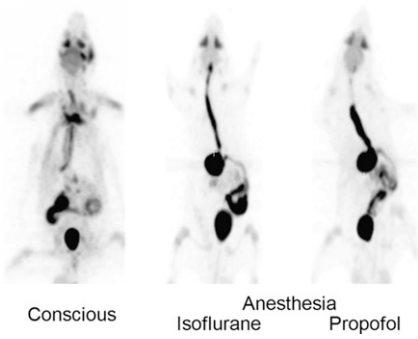
Tumor response to 3-BrPA: Liapi and colleagues describe the effects of 3-bromopyruvate on tumor glucose metabolism using PET/CT at multiple time points after treatment in a VX2 tumor model of liver cancer.. . . . . ***Page 225***



PET and vandetanib: Walter and colleagues explore whether metabolic imaging with PET allows noninvasive detection of response to treatment with this *RET*-inhibitor in an animal model of thyroid cancer. . . . . ***Page 231***

PET and EphB4 receptors: Xiong and colleagues evaluate a novel ^{64}Cu-labeled peptide with high receptor binding affinity for PET of EphB4 receptors, which are overexpressed in most solid tumors. . . . . ***Page 241***

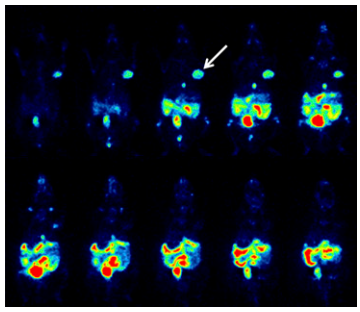
Imaging gastrointestinal drug absorption: Yamashita and colleagues assess the process of gastrointestinal drug absorption in rats using PET and discuss the implications of their methodology for the drug discovery and development process. . . . . ***Page 249***



Microglial activation and minocycline: Converse and colleagues describe methodologies for studying microglial activation and therapeutic downregulation in response to minocycline by means of noninvasive imaging and describe potential utility in therapies for multiple sclerosis. . . . . ***Page 257***

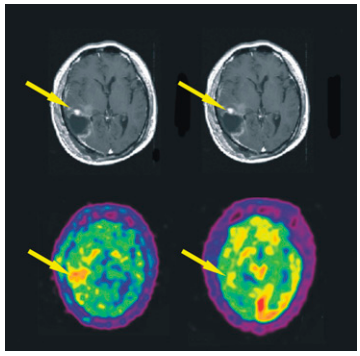
(*R*)-^{11}C-rolipram cardiac PET: Thomas and colleagues use small-animal PET to characterize the binding of this phosphodiesterase 4–selective inhibitor in the rat myocardium in vivo . . . . . ***Page 263***

^{18}F-labeled bombesin analog for PET: Honer and colleagues report on in vitro and in vivo studies providing favorable preclinical data on specific and effective tumor targeting by ^{18}F-BAY 86-4367, with promise for clinical PET in prostate carcinoma. . . . . ***Page 270***



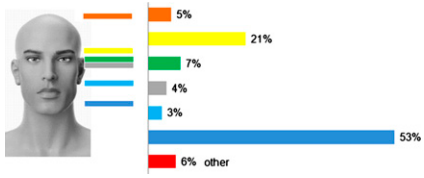
Activatable cell-penetrating peptides: van Duijnhoven and colleagues describe the development of these probes and modification for sensitivity to matrix metalloproteinase-2 and -9 for nuclear imaging purposes. . . . . ***Page 279***

Novel ^{11}C PET tracer: Deng and colleagues describe the radiosynthesis and biologic evaluation of *S*-^{11}C-methyl-L-cysteine as a potential amino acid PET tracer for tumor imaging and for differentiation of tumor from inflammation. . . . . ***Page 287***



Hepatic function during regeneration: de Graaf and colleagues compare ^{99m}Tc-galactosyl human serum albumin scintigraphy, ^{99m}Tc-mebrofenin hepatobiliary scintigraphy, indocyanine green clearance, and galactose elimination capacity in assessment of hepatic function during liver regeneration in rats. . . . . ***Page 294***

International PET/CT variation: Beyer and colleagues summarize the results of a worldwide survey designed to gather data on clinical PET/CT operations for use in perspective and discussions on standardization. . . . . ***Page 303***



Variations in PET/CT methodology: Graham and colleagues report on the results of a survey of oncologic imaging at U.S. academic medical centers to determine and characterize variability in clinical and research PET/CT methodologies. . . . . ***Page 311***

Pediatric guidelines: Gelfand and colleagues describe the process by which the Pediatric Nuclear Medicine Dose Reduction Workgroup arrived at new consensus guidelines for pediatric administered doses for 9 commonly used radiopharmaceuticals. . . . . ***Page 318***

Credentialing statement: In a conjoint statement, the SNM, American College of Nuclear Medicine, and American Board of Nuclear Medicine recommend minimum training requirements for therapeutic procedures using radiopharmaceuticals. . . . . ***Page 323***

ON THE COVER

The *RET* protooncogene triggers multiple intracellular signaling cascades regulating cell cycle progression and cellular metabolism. Metabolic imaging allows noninvasive detection of response to the *RET* inhibitor vandetanib in vivo and may permit identification of patients who respond to vandetanib early in the course of treatment.

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