PET and hypoxia: Carlin and Humm review current understanding of the physiologic processes underlying hypoxia and its imaging with PET tracers and offer perspectives on future directions in clinical utility in diagnosis and treatment management.  

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**18F-NaF kinetics and reproducibility:**  
Kurdziel and colleagues evaluate the kinetics of 18F-sodium fluoride and reassess recommended dose, optimal uptake period, and reproducibility using a current-generation PET/CT scanner.  

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**Pretargeted RIT in MTC:** Salaun and colleagues describe a phase II trial of the efficacy and safety of anti–carcinoembryonic antigen pretargeted radioimmunotherapy in patients with metastatic medullary thyroid carcinoma, including correlation of serum biomarkers with outcomes.  

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**Reproducibility of lymphoscintigraphy:**  
Vidal and colleagues compare results of lymphoscintigraphy performed by different team members following a strict protocol to assess lymphatic drainage and location and number of sentinel lymph nodes in patients with melanoma.  

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**Calcification and myocardial ischemia:**  
Yamazato and colleagues use adenosine stress myocardial perfusion SPECT to investigate the hypothesis that aortic valve calcification is strongly associated with inducible myocardial ischemia, even among asymptomatic patients.  

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**Vulnerable folate–FITC plaque imaging:**  
Jager and colleagues conjugate the ligand folate with fluorescein isothiocyanate to research the potential of folate receptor β fluorescence imaging in identifying vulnerable sites of macrophage accumulation in atherosclerotic plaque.  

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**MFR in 13N-ammonia PET:** Fiechter and colleagues evaluate the added diagnostic value of myocardial flow reserve over conventional nuclear myocardial perfusion imaging alone as assessed by 13N-ammonia PET/CT to predict angiographic coronary artery disease.  

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**SPECT/CT in infectious endocarditis:** Erba and colleagues look at the value of 99mTc-HMPAO white blood cell scintigraphy, including SPECT/CT acquisitions, in patients with suspected infectious endocarditis.  

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**PET/MRI in oncology:** Buchbender and colleagues continue their educational overview of integrated PET/MRI in oncologic applications with a review of current literature on utility in tumors of the bone, soft-tissue sarcoma, melanoma, and lymphoma.  

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**PET tracer selectivity:** Wiriyasermkul and colleagues examine the interaction of PET tracer 18F-α-methyl tyrosine with L-type amino acid transporter 1 to elucidate mechanisms of tracer uptake in tumors.  

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**18F-tracer uptake and microenvironment:** Huang and colleagues compare intratumoral
ON THE COVER

Respiratory and cardiac motion is the most serious limitation to whole-body PET. Here, reconstructed PET images of a freely breathing monkey show that MRI-based motion correction in simultaneous PET/MRI increases contrast and resolution but does not increase noise. This results in significant improvement in PET image quality and is a compelling rationale for further evaluation in clinical studies.

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