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Ultra high field MRI and PET fusion imaging for neuroscience research: From Parkinson diseases to cognitive sciences

Recent progresses on new imaging and system developments, especially on the brain dedicated PET-MRI, using high resolution HRRT-PET and ultra-high field 7.0 T magnetic resonance imaging (MRI) and their applications to basic and clinical neuroradiology will be discussed. With high field MRI, such as the 7.0 T MRI, one can now visualize the subfields of the hippocampus and brainstem in vivo as well as tractography hitherto unable to do with existing MRI systems. Together with molecular imaging using positron emission tomography (PET), now, it is possible to visualize metabolic functional changes quantitatively in human brain.

Biography

Zang Hee Cho was the Professor of Radiological Science at University of California at Irvine and the University Professor and Director of the Neuroscience Research Institute, Incheon, Korea since 1985, until he moved to Advanced Institutes of Convergence Technology, Seoul National University. He has been a pioneer in positron emission tomography (PET) and magnetic resonance imaging since the inception of the computerized tomography (CT) in 1972. He was the first one who pioneered world's first "Ring PET", the first molecular imaging device, in 1975.

More recently, he pioneered the first PET-MRI (Proteomics 2008) demonstrating that in vivo human sub-millimeter high resolution molecular imaging is possible and published over one hundred neuroscience and related scientific publications. He has more than 300 peer reviewed scientific publications covering from nuclear physics to neuroscience and published 3 graduate level text books. Among the numerous honors and awards, he was elected as a Member of the US National Academy of Sciences, Institute of Medicine in 1997.

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