Detection of Acute Changes in Neurotransmission in the Live Human Brain

Current neuroimaging techniques are not very good at detecting acute changes in the levels of neurotransmitters in the live human brain. As a result, we have poor understanding of their roles in the regulation of human cognition and behavior. We developed the single scan dynamic molecular imaging technique to detect, map and measure task-induced acute changes in dopamine neurotransmission in the live human brain. The technique exploits the competition between a neurotransmitter and its receptor ligand for occupancy of the same receptor sites. We used the technique to detect dopamine released during cognitive, behavioral and emotional task performance and also to examine novel hypotheses concerning pathophysiology of psychiatric and neuropsychiatric conditions, including ADHD and PTSD. Since the technique provides information that cannot be obtained by other means, it could a valuable tool not only to study human cognition and behavior but also to explore neurocognitive bases of psychiatric conditions.

Biography

Badgaiyan is the Director and Principal Investigator of Molecular and Functional Brain Imaging Laboratory and Director of the University Laboratory for Advanced Radiochemistry. Dr. Badgaiyan graduated from Gandhi Medical College, Bhopal in India and completed his psychiatry residency training at Harvard Medical School. He had postdoctoral training in cognitive neuroscience at University of Oregon, University of Pittsburgh and Harvard University. He also had training in molecular imaging at Massachusetts General Hospital, Boston, and clinical research training at MIT. He is board certified in General Psychiatry and in Addiction Medicine. Dr. Badgaiyan is a member of a number of National and International Scientific Societies. He is the Editor-in-Chief of 7 international scientific journals and a member of the editorial board of over 40 other scientific publications. He has organized a number of international conferences and symposia.

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