AddictionTherapy-2013

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Addiction Research & Therapy

July 22-24, 2013 Las Vegas, USA

Gene modulation by transcription factor proteins and micro RNA in living brains after Amphetamine

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Abstract

This presentation will explore Magnetic Resonance (MR) visible probes to target image intracellular gene transcription activator proteins that are induced by drugs of addiction. Drug addiction is a major health problem that severely hampers the productivity of many members of our society. While studies indicate that drug addiction results from combined influences of genes and environment, recent studies suggest that epigenetic modifications of gene transcription factors may play an important role in the develop\ment of addictions in humans. Advances in cellular and molecular biology in the past century have led to identification of novel gene markers, the signaling pathways they influence and gene activities they regulate. With biopsy the only source of tissue for conventional assays, such studies are not permitted in humans. We will present our effort to develop and investigate a targeted MR imgaing technique and to apply it for studies of drug addiction in a series of live brains. Three such activities that they have shown modification in in studies of drug addiction are intracellular protein coding (messenger RNA) and noncoding (microRNA) and activator protein-1 (AP-1) and nuclear factor kappa-beta (NF-k-b). Our efforts for validation of such technology for gene actions in living brains include using a transgenic mouse that is unable to produce a functional AP-1 protein to bind at the AP-1 site and blocks sensitization of drugs of abuse.

Biography

Philip K. Liu has completed his Ph.D. from Michigan State University and postdoctoral studies from the Department of Pathology, University of Washington Medical School. He is an associate biologist and Associate Professor of Radiology at Massachusetts General Hospital and Harvard Medical School. He has published more than 45 peer-reviewed papers in reputed journals.

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