



CSIR - INDIAN INSTITUTE
OF TOXICOLOGY RESEARCH



COUNCIL OF SCIENTIFIC
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Golden Jubilee Lecture

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Professor Subhash C. Pandey

Professor & Director, Alcohol Research Center
Dept. of Psychiatry, University of Illinois at Chicago
& Senior Research Career Scientist
Jesse Brown VA Medical Center, Chicago IL 60612, USA



50 Years of Service to the Nation



Professor Subhash C. Pandey

Professor Subhash C. Pandey is currently Director, Alcohol Research Centre, University of Illinois at Chicago, Chicago, IL. After doing MSc in Biochemistry from Allahabad University, Allahabad in 1982, he joined Pharmacology Division, CSIR–Central Drug Research Institute (CSIR–CDRI), Lucknow to carry out PhD and received the doctoral degree from University of Kanpur, Kanpur, India in 1987. Dr. Pandey then moved to the Department of Psychiatry, University of Illinois at Chicago and Illinois State Psychiatric Institute, Chicago for postdoctoral training in neuro-psychopharmacology (1987-1989) and continued to work there as Research Scientist and Assistant

Professor (1989–1994). He held several positions and continued to serve as Assistant Professor of Biochemistry in Psychiatry (1994 – 2000), Associate Professor of Anatomy and Cell Biology (2000-2006), Associate Professor of Biochemistry in Psychiatry - with tenure (2000 – 2006). He is continuing there as Professor of Anatomy and Cell Biology (2006 – to date) and Professor of Biochemistry in Psychiatry - with tenure (2006 – to date). Recently, he has taken over as Director, Alcohol Research Centre, University of Illinois at Chicago, Chicago. His research is primarily focused to understand the molecular and cellular neurobiology of alcoholism and drugs of abuse.

Professor Pandey has received several honours and awards including Bowles Lectureship Award for distinguished research on causes, prevention and/or treatment of alcoholism by University of North Carolina at Chapel Hill, USA (2010), International Sardar Patel Award for excellent neuroscience research by Sardar Vallabhbhai Patel Foundation, New Delhi (2010), Professor SN Pradhan Memorial Lectureship in Neuropharmacology by the Department of Pharmacology, Howard University, Washington DC (2011). He has also received the Mario-Toppo Distinguished Scientist Award by Association of Scientists of Indian Origin in America (2014) and has been included in the list of notable biomedical VA researchers, USA (2014) besides being honoured as Departmental Faculty of the Year (psychiatry), College of Medicine, University of Illinois at Chicago (2014) for his outstanding scientific contributions. Professor Pandey is the elected Fellow of Collegium Internationale Neuro-Psychopharmacologicum and Indian Academy of Neurosciences and member of several professional societies including American Society for Neuroscience, Research Society on Alcoholism; International Society for Biomedical Research on Alcoholism, American Association for the Advancement of Science; American Society for Neurochemistry; International Society for Neurochemistry and Indian Pharmacological Society. Dr. Pandey is the member of Editorial Board of several peer reviewed journals. Besides, he is the Field Editor of *Alcoholism: Clinical and Experimental Research* (2011-present), Review Editor of *Frontiers in Pharmacology* (2014-present), Member-Advisory Committee T32 training grant in “Neuroimmunoendocrine effects of alcohol” of Loyola University (2010-present). Dr. Pandey has extensively published in peer reviewed journals and contributed several reviews and book chapters. He is widely travelled and an accomplished researcher who has made name in the area with recognition par excellence that attracted many research grants.

The Emerging field of Neuroepigenetics in the Pathophysiology of Alcoholism

Subhash C. Pandey, PhD

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A variety of factors, including genetic traits, may mediate the development of alcoholism. As a long standing hypothesis in the field of alcohol research, the dark side of addiction proposes that alcoholics may be predisposed to alcohol-drinking behaviors as a compensatory mechanism to self-medicate underlying heightened innate anxiety levels or anxiety that develops during withdrawal after chronic drinking. Binge alcohol drinking during adolescence can predispose an individual to alcohol use disorders later in life. Epigenetic mechanisms via histone modifications and DNA methylation play an important role in the regulation of gene expression and synaptic plasticity. The presentation will focus on the evidence regarding the epigenetic and molecular framework for the co-morbidity of anxiety and alcoholism using various preclinical animal models. The results revealed that chromatin remodeling, due to alcohol exposure in specific brain circuitry, leads to development of tolerance and dependence. Specifically, epigenetic inheritance within the amygdala in a genetic strain of alcohol preferring animals plays a crucial role in maintaining heightened anxiety and alcohol drinking behaviors. The study also exhibits a novel evidence that binge drinking during adolescence may be involved in the afore-mentioned epigenetic changes and synaptic remodeling in anatomically specific brain circuitry that persists in adulthood and is responsible for the phenotype of anxiety and alcoholism. Further, role of histone deacetylases (HDACs) and DNA methyltransferases (DNMTs) in the pathophysiology of alcoholism and their implication as a therapeutic target for the treatment or prevention of alcoholism shall also be presented.

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CSIR-IITR, Lucknow is the only multidisciplinary research institute in the field of toxicology in South East Asia with the motto:

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- Food, Drug & Chemical Toxicology
- Environmental Toxicology
- Regulatory Toxicology
- Nanotherapeutics & Nanomaterial Toxicology
- Systems Toxicology & Health Risk Assessment

Services Offered

- GLP certified for pre-clinical toxicity studies
- NABL accredited
- Safety / toxicity evaluation of NCEs
- Water quality assessment and monitoring
- Analytical services
- Environmental monitoring and impact assessment
- Epidemiological studies
- Information on chemicals / products

Recognitions

- Scientific & Industrial Research Organizations (SIROs)
- UP Pollution Control Board (Water & Air)
- Indian Factories Act (Drinking Water)
- Bureau of Indian Standards (Synthetic Detergents)
- Food Safety & Standards Authority of India (FSSAI)

Technologies Developed / Available

- Water Analysis Kit
- Mobile Laboratory Van for on spot water quality analysis
- Argemone Detection Kit for rapid screening of Argemone in mustard oil
- CD-Strip for detection of butter yellow, an adulterant in edible oils
- Arsenic Detection Kit



Director

CSIR-Indian Institute of Toxicology Research

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