

School of Pharmacy

Division of Pharmacology

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Academic Background:

University of Cincinnati, Ohio, 1985

Research Interests:

The research in my laboratory is focused on two principal areas. The first deals with the role of IL-1-NF-kappaB/PLA₂ – COX system in integrating neuronal activity between the periphery and the spinal cord in chronic pain states. We are also examining the role of non-receptor tyrosine kinase in hyperalgesia. We use an array of biochemical and molecular biological techniques to investigate the signaling mechanisms of IL-1b involved in hyperalgesia. A part of this research also involves interactions between substance P and cytokines. We use both whole animal and cell/tissue culture systems.

My second research interest centers on the interactions between phosphoinositide system and amyloid precursor proteins (APP) during aging. We are currently characterizing the effect of aging on phosphatidylinositide system with emphasis on mRNA and protein levels for subtypes of insP₃ receptor in the cerebral cortex. We are also trying to understand how aging affects the characteristics of insP₃ receptors.

Ultimately, our goal is to understand the fundamental mechanisms underlying hyperalgesic states which characterize inflammatory pain of long duration and clarify the role of insP₃/insP₃ receptor/Ca²⁺ pathways in neuronal transmission deficits associated with aging.

Research Grants:

Our work has been funded by NIH, University of Missouri Research Board, National Headache Foundation, and UM Program on Research on Alzheimer and related diseases.

Representative Publications:

Igwe, O.J. (2006) Agents that act by different mechanisms modulate the activity of protein kinase C β II isozyme in the rat spinal cord during peripheral inflammation. *Neuroscience* 138(1):313-28.

Moolwaney A.S., **Igwe, O.J.** (2005) Regulation of the cyclooxygenase-2 system by interleukin-1 β through mitogen-activated protein kinase signaling pathways: a comparative study of human neuroglioma and neuroblastoma cells. *Brain Res Mol Brain Res.* 137(1-2):202-12.

Igwe, O.J. (2005) Modulation of peripheral inflammation in sensory ganglia by nuclear factor (κ)B decoy oligodeoxynucleotide: involvement of SRC kinase pathway. *Neurosci Lett.* 381(1-2):114-9.

Igwe, O.J. and Chronwall, B.M. (2001) Hyperalgesia induced by peripheral inflammation is mediated by protein kinase C β II isozyme in the rat spinal cord. *Neuroscience* 104:871-890.

Igwe, O.J., Murray, J.N. and Moolwaney, A.S. (2001) Interleukin-1-induced cyclooxygenase and nitric oxide synthase expression in the rat dorsal root ganglia is modulated by antioxidants. *Neuroscience* 105:971-985.

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