- **Research Work Title:** Brain Stimulation for Neurological Conditions
- **Researcher:** Prof. Andres M. Lozano
- **Country:** France
- **Field:** Medical Sciences (Neurosurgery & Neuroscience)
- **Scientific Affiliation:** Division of Neurosurgery, Department of Surgery, University of Toronto; and Krembil Research Institute, Toronto Western Hospital, University Health Network

Abstract:

It is possible to introduce permanent electrodes within various circuits in the human brain using a technique called deep brain stimulation (DBS). These electrodes can then be powered through an internal pulse generator or pacemaker, which can be programmed to deliver electrical current at targets. Depending on where the electrodes are placed, the current can then be used to either drive or suppress neural activity in the vicinity as well as at connected remote sites. The delivery of such electrical activity also likely exerts cellular and biological effects. Such electrodes can be placed in circuits controlling a number of functions including motor function, mood, epileptic activity and perhaps even cognitive and memory activity. For some disorders like Parkinson's disease these techniques are well established. These approaches are being examined in other disorders including disorders of mood such as depression and cognitive disorders such as Alzheimer's disease.

Biography:

Prof. Lozano received his MD at the University of Ottawa and his neurosurgical training and PhD in Neurobiology at McGill. He is Professor and Chairman of Neurosurgery at the University of Toronto and holds the Tasker Chair in Functional Neurosurgery at Toronto Western Hospital and a Canada Research Chair in Neuroscience. Prof. Lozano has over 500 publications and serves on the board of several international organizations. He is the most cited neurosurgeon in the world according to Thompson Reuters. He has received several awards including the Olivecrona Medal and Pioneer in Medicine Award. He has been elected to the Royal Society of Canada, Order of Spain and Order of Canada. He is best known for his work in Deep Brain Stimulation (DBS). His team has mapped out cortical and subcortical structures in the human brain and pioneered applications of DBS for Parkinson's disease, depression, dystonia, anorexia, Huntington's and Alzheimer's disease.