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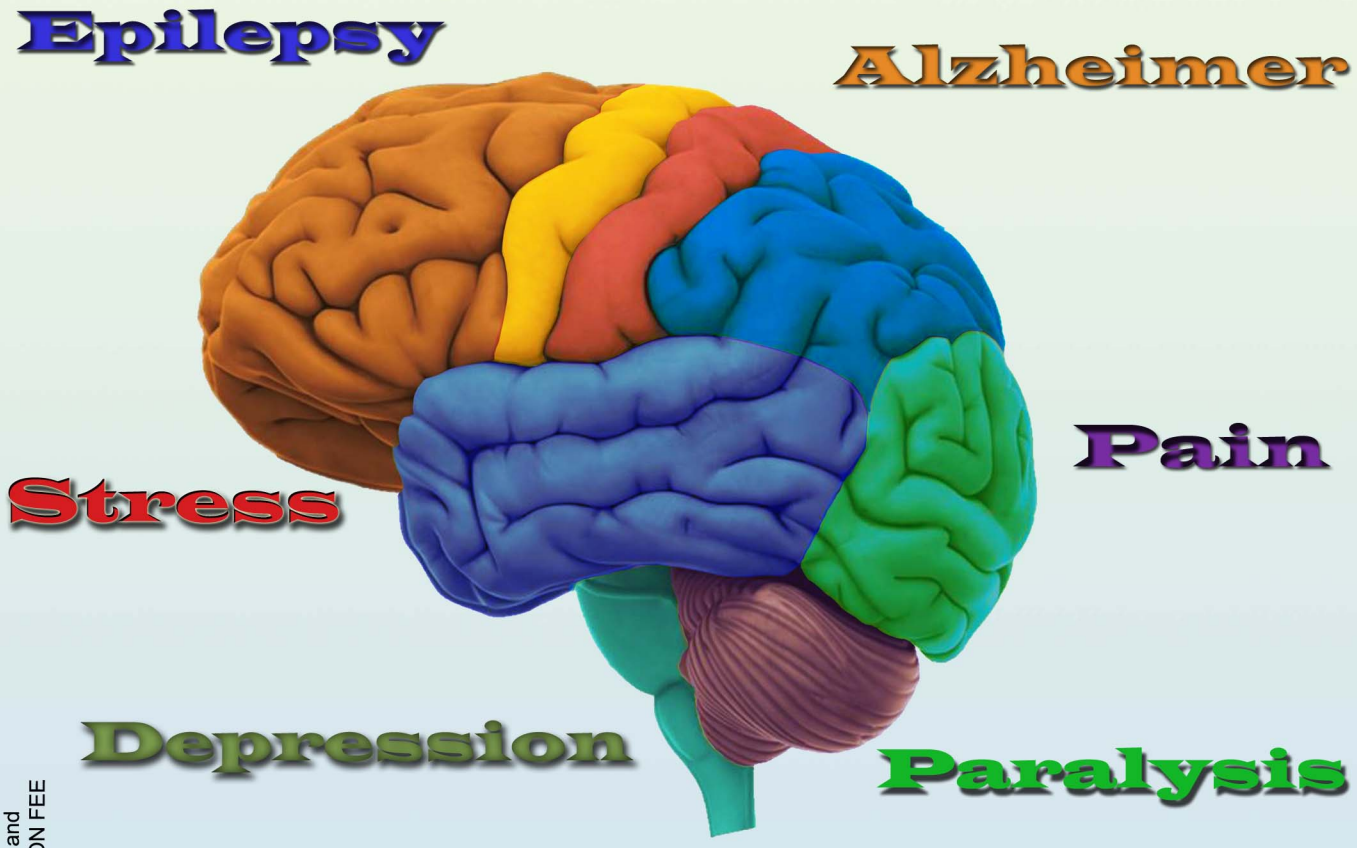

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AIM AND SCOPES
Journal of Cellular Neuroscience and Oxidative Stress is an online journal that publishes original research articles, reviews and short reviews on the molecular basis of biophysical, physiological and pharmacological processes that regulate cellular function, and the control or alteration of these processes by the action of receptors, neurotransmitters, second messengers, cation, anions, drugs or disease.

Areas of particular interest are four topics. They are;

A- Ion Channels (Na^+- K^+ Channels, Cl^- channels, Ca^{2+} channels, ADP-Ribose and metabolism of NAD^+, Patch-Clamp applications)

B- Oxidative Stress (Antioxidant vitamins, antioxidant enzymes, metabolism of nitric oxide, oxidative stress, biophysics, biochemistry and physiology of free oxygen radicals)

C- Interaction Between Oxidative Stress and Ion Channels in Neuroscience
(Effects of the oxidative stress on the activation of the voltage sensitive cation channels, effect of ADP-Ribose and NAD^+ on activation of the cation channels which are sensitive to voltage, effect of the oxidative stress on activation of the TRP channels in neurodegenerative diseases such Parkinson's and Alzheimer's diseases)

D- Gene and Oxidative Stress
(Gene abnormalities. Interaction between gene and free radicals. Gene anomalies and iron. Role of radiation and cancer on gene polymorphism)

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Keywords
Ion channels, cell biochemistry, biophysics, calcium signaling, cellular function, cellular physiology, metabolism, apoptosis, lipid peroxidation, nitric oxide, ageing, antioxidants, neuropathy, traumatic brain injury, pain, spinal cord injury, Alzheimer's Disease, Parkinson's Disease.

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Oral Presentation 3

The gut-brain axis: interactions between microbiota and nervous systems

Orhan AKPINAR
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Humans coexist in a mutualistic relationship with the intestinal microbiota, a complex microbial ecosystem that resides largely in the distal bowel. The lower gastrointestinal tract contains almost 100 trillion microorganisms, most of which are bacteria. More than 1,000 bacterial species have been identified in this microbiota. The intestinal microbiota lives in a symbiotic relationship with the host. A bidirectional neurohumoral communication system, known as the gut–brain axis, integrates the host gut and brain activities (Mayer et al. 2015). Communication between the brain and gut occurs along a network of pathways collectively termed the brain-gut axis. The brain-gut axis encompass the CNS, ENS, sympathetic and parasympathetic branches of the autonomic nervous system, neuroendocrine and neuroimmune pathways, and the gut microbiota (Colins et al. 2012).

The gut microbiota can signal to the brain via a number of pathways which include: regulating immune activity and the production of proinflammatory cytokines that can either stimulate the HPA axis to produce CRH, ACTH and cortisol, or directly impact on CNS immune activity; through the production of SCFAs such as propionate, butyrate, and acetate; the production of neurotransmitters which may enter circulation and cross the blood brain barrier; by modulating tryptophan metabolism and downstream metabolites, serotonin, kynurenic acid and quinolinic acid. Neuronal and spinal pathways, particularly afferent signaling pathways of the vagus nerve, are critical in mediating the effect of the gut microbiota on brain function and behavior. Microbial produced SCFAs and indole also impact on EC cells of the enteric nervous system (Romijn et al. 2008; Cani et al. 2013).

The purpose of this presentation was to summarize our current knowledge regarding the role of microbiota in bottom-up pathways of communication in the gut-brain axis.

Key words; Microbiota; Gut-brain axis: Brain function; Enteric nervous system.

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