

Neural Plasticity of the Metabolic Programming: The Effects of Insults during Critical Periods of Life on Metabolism

CALL FOR PAPERS

Experimental and epidemiological studies have confirmed that either under- or overnutrition during critical periods of life can result in metabolic dysfunctions. This is known as metabolic programming and it may lead to the development of obesity, hypertension, and type 2 diabetes later in life. Impaired brain development associated with imbalanced autonomic nervous system due to metabolic programming is key to the genesis of the associated pathophysiology.

The great plasticity of the organism allows an individual to develop a “thrifty phenotype” when appropriate diet requirements are not available (e.g., malnourishment); however, once an individual undergoes nutritional insults during critical periods of life, such as gestation and lactation, metabolic syndrome may develop once his/her nutritional status comes back to normal standards later in life. These disturbances are defined by the Developmental Origins of Health and Disease (DOHaD), a concept that has been extensively discussed worldwide. Physiological control of the metabolism depends on central nervous system (CNS) modulation, and impairments induced by diet and other insults, both in human and animal models, have been linked to several chronic diseases. A classic example of metabolic programming is shown by the children of mothers who were pregnant during the Dutch famine of 1944 (occurred in Netherlands at the end of World War II). These children displayed epigenetic alterations linked to disturbances in growth and development.

This special issue is intended to discuss and present the cutting edge research involving metabolic programming occurring in critical periods of life, such as gestation and lactation. It is expected to address and report advanced topics on the effects of insults during critical periods of life and their outcomes later in life, focusing on the plasticity of the CNS. We invite investigators to submit original research articles and reviews to this special issue.

Potential topics include but are not limited to the following:

- ▶ Metabolic programming and its impact on the CNS
- ▶ Plasticity of the CNS due to nutritional insults
- ▶ CNS plasticity during gestation and lactation and its altered modulatory effect on peripheral tissues
- ▶ Epigenetic roles in metabolic programming of the CNS
- ▶ Protein-restriction diet in early life and its impact on hypothalamic induced obesity
- ▶ Hypothalamus as a key regulator of glucose homeostasis and its sensitivity during developmental periods

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/np/npmp/>.

Lead Guest Editor

Luiz F. Barella, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, USA
lfbarella@gmail.com

Guest Editors

Paulo Mathias, State University of Maringa, Maringa, Brazil
pmathias@uem.br

Júlio C. De Oliveira, Federal University of Mato Grosso, Sinop, Brazil
biojborges@gmail.com

Sai P. Pydi, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, USA
saiprasad.pydi@nih.gov

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First Round of Reviews

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