

**AMERICAN SOCIETY FOR NUTRITION
SYMPOSIUM/WORKSHOP/CONTROVERSY SESSION APPLICATION**

(Please limit to 3 pages or less)

Title: **Nutritional Sciences Council Symposium:
Nutritional Experiences in Early Life as Determinants
of the Adult Metabolic Phenotype**

Chair: Dr. Douglas G. Burrin
Associate Professor of Pediatrics
USDA ARS Children's Nutrition Research Center
Baylor College of Medicine

Co-chair: Dr. Jack Odle
WNR Professor of Nutritional Biochemistry
North Carolina State University

Type of Session: Symposium

This symposium proposal was developed by the Nutritional Sciences Council (Chair, Susan Hutson, and Drs. Turner, Lohse, Bodnar, Gerrior, Kilberg, Cassano, Lonnerdal, Burrin, Odle) and if approved will be sponsored by ASN.

Overall Description of the Symposium Content:

The goal of this symposium is to review multiple facets of the rapidly expanding field of developmental origins of health and disease (DOHaD). Specifically, speakers have been selected to address the influences of nutritional experiences in early life and their putative imprinting/programming impact on adult metabolic phenotype. Adult-onset outcomes of obesity, diabetes and metabolic syndrome will be the primary focus of this symposium. It is expected that the symposium content will span a broad continuum from cell biology, fundamental, metabolism and physiology to practical, clinical outcomes and health. Accordingly, the symposium should appeal to a large cross-section of ASN membership.

Significance, Interest to the Membership, and Uniqueness:

Originating from the *Barker Hypothesis* linking fetal exposures to outcomes in adult life, the concept of metabolic imprinting is bringing new insights into the ontogeny and pathogenesis of disease. Mounting evidence indicates that increased risks of hypertension, heart disease, stroke, obesity, Type 2 diabetes and metabolic syndrome are associated with disrupted fetal and neonatal nutrition and growth. These intriguing associations lead to some compelling questions that will be addressed by this symposium: How much of adult metabolic phenotype is predicated on metabolic events and nutritional exposures in early life? By what cellular and hormonal mechanisms are these effects mediated? Can early interventions prevent or change the impact of disrupted early nutrition on the adult phenotype? To address these questions, a wide range of experimental models have been developed to investigate the underlying biological mechanisms, and accordingly, this field of study is burgeoning in both the basic and clinical research areas. The field has attracted scientists from many backgrounds and has spawned its own society (see web link below). For these reasons, we believe this topic will have wide-spread appeal to the ASN constituency. We expect this symposium to provide ASN members new insights into the nutritional relevance of this emerging field and establish relationships with the DOHaD society, since both Drs. Hanson and Ozanne are members of their governing council.

References:

- A) Barker, D.J.P. (Ed.). (1992). Fetal and infant origins of adult disease. London: BMJ Books.
- B) Gluckman, P. D. and M. A. Hanson. 2007. Developmental plasticity and human disease: research directions. J. Intern. Med. 261:461-471.
- C) International Society for Developmental Origins of Health and Disease (DOHaD) <http://www.mrc.soton.ac.uk/dohad/index.asp>

Learning Objectives:

- 1) Provide an overview of the epidemiological evidence for how nutritional experiences during different stages of early developmental predispose to a common adult metabolic phenotype.
- 2) Describe how early life nutritional experiences affect the developmental programming of hypothalamic regulation of food intake and metabolism -- specifically how leptin and insulin exposure affect neuronal development.
- 3) Describe how excessive nutrition during maternal and neonatal life regulate cellular and endocrine changes via the pancreatic beta cell and autonomic nervous system.
- 4) Describe how undernutrition during critical periods of early development predispose the offspring to the development of adult metabolic phenotypes.
- 5) Compare and contrast the differences in developmental pathways to metabolic phenotype and how this affects specific organs and endocrine factors later in life.

Planned Speakers and their Affiliations: This session will consist of four 25 min presentations followed by a question and answer period. All speakers have been contacted and have agreed to participate.

- 1) **Mark Hanson**, Director, Centre for Developmental Origins of Health & Disease, University of Southampton, UK (**confirmed**)
 - 2) **Sebastien Bouret**, Ph.D., Saban Research Institute, Children’s Hospital Los Angeles, Keck School of Medicine, Univ. Southern California, Los Angeles, CA (**confirmed**)
 - 3) **Mulchand Patel**, Ph.D., Dept. of Biochemistry, School of Medicine and Biomedical Sciences, SUNY-Buffalo (**confirmed**)
 - 4) **Susan Ozanne**, Ph.D., Department of Clinical Biochemistry, University of Cambridge, Addenbrooke’s Hospital, Hills Road, Cambridge (**confirmed**).
- (Question/answer period)**

Budget and Plan for Covering Expenses:

-Airfare for 4 speakers	\$_____.
-Hotel for 4 speakers (\$250/night x 2 nights x 4 people)	\$_____.
-Meals, \$ /day x 3 days x 4 people	\$_____.
-Local transportation, \$ /person x 4	\$_____.
-Registration fee, \$250 ea x 4	\$1,000
-Honorarium: Speakers, \$ ea x 4	\$_____.
	Total \$

All expenses would be paid by _____.

Contact Information for Chairs and Speakers

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