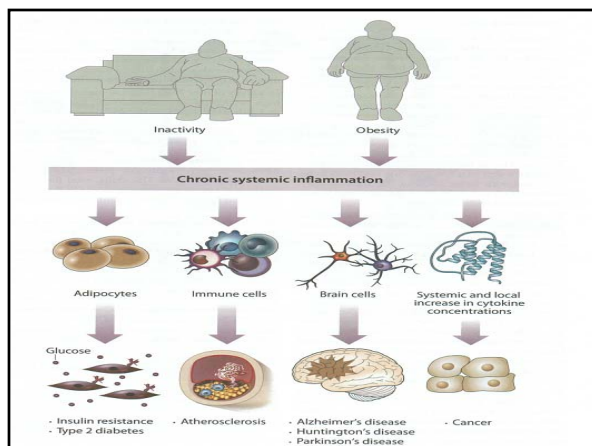


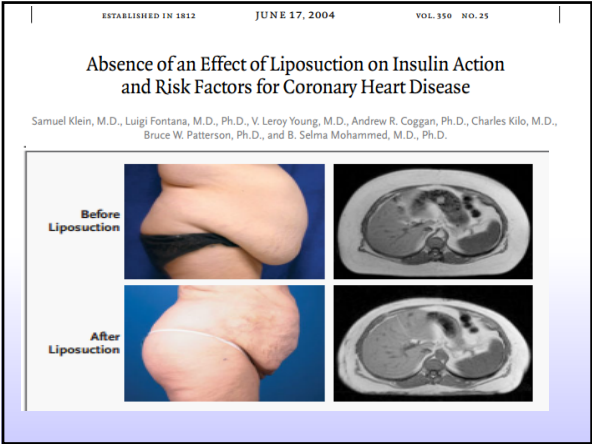
The Nutrition/Neuroendocrineimmune Network

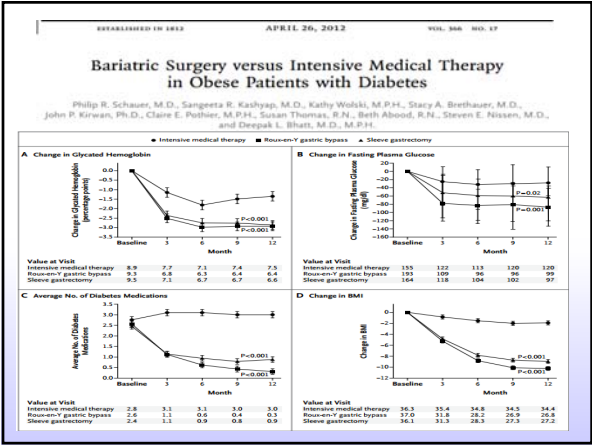
Jeffrey Bland, Ph.D., FACN, FACB
President
Personalized Lifestyle Medicine Institute
www.plminstitute.org

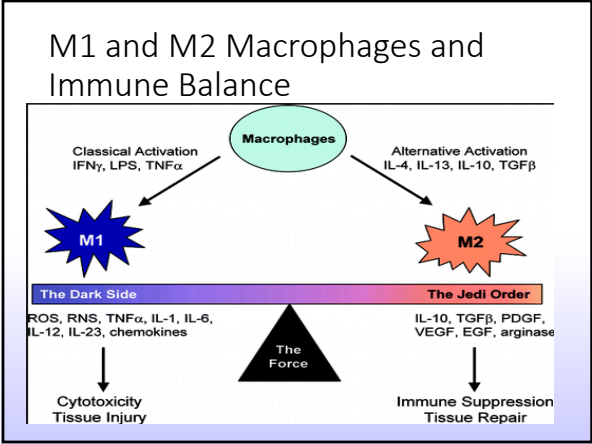
Connecting the Immune, Endocrine and Nervous Systems

Network Biology and Functional Medicine

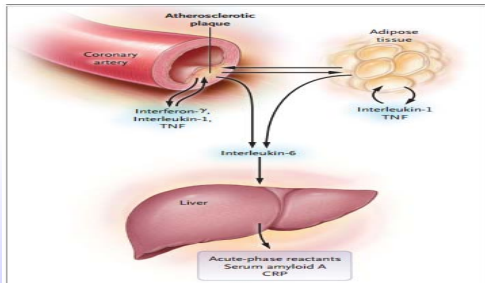




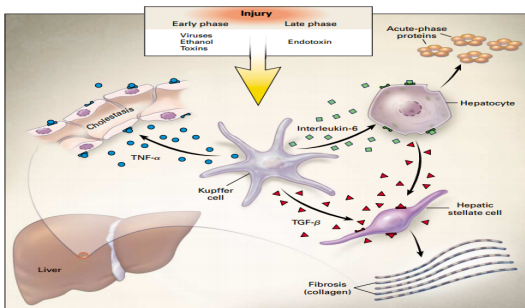




Metabolic Inflammation and the Cytokine Cascade

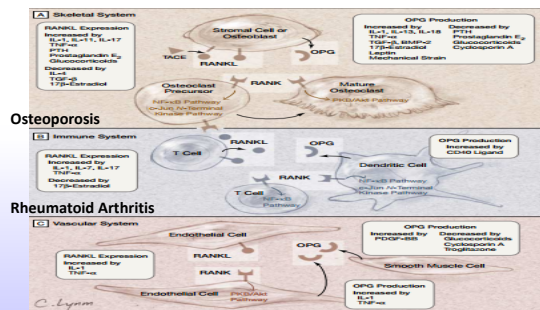


Hepatic Kupffer Cell Activation, Cytokines and Metabolic Inflammation



Clinical Implications of the Osteoprotegerin/ RANKL/RANK System for Bone and Vascular Diseases

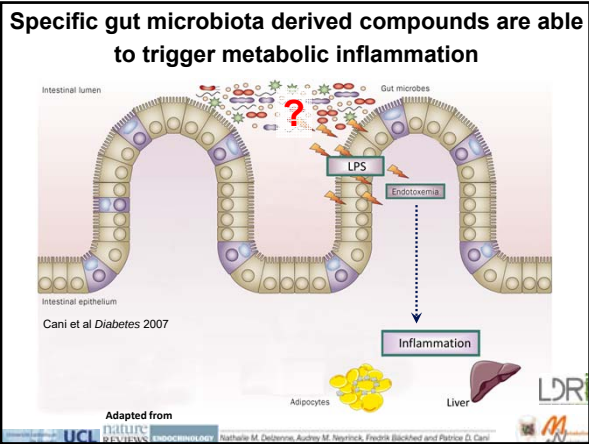
JAMA. 2004;292:490-495
Think Shared Common Mechanism

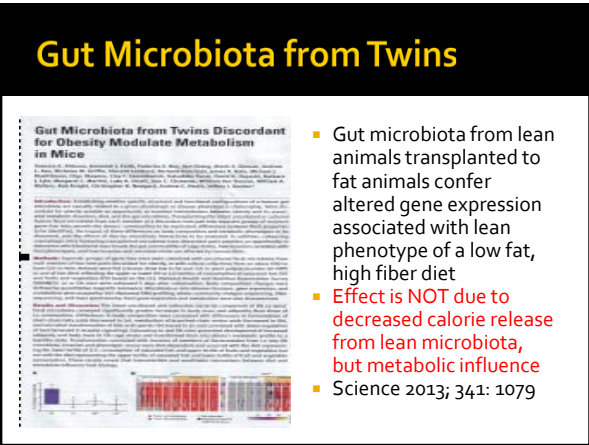


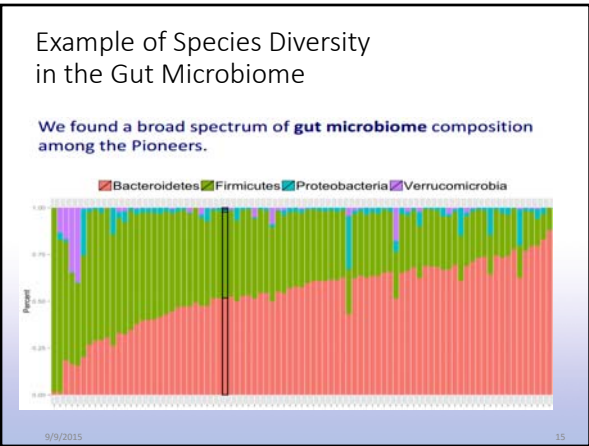
Endotoxin, Inflammation, and Mitochondrial Uncoupling

Clues to Gene Activity in Inflammation Found

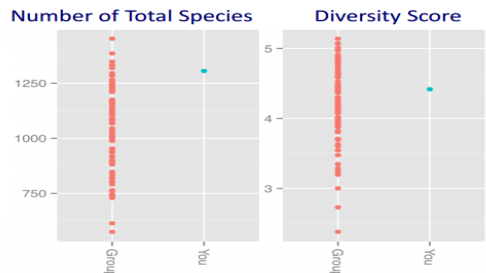
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Relative Evaluation of Microbiome Species Diversity



9/9/2015

16

Role of Specific Nutrients on Humoral Immunity

Influence of nutrient-derived metabolites on lymphocyte immunity

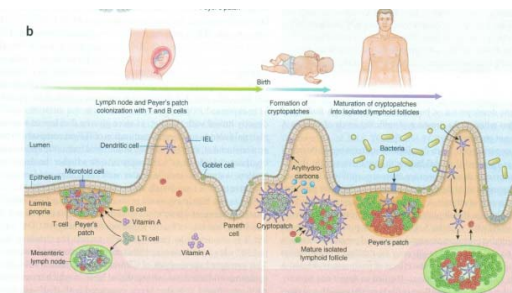
Wolfe-Mathew & Cyster-Fernandez

Digestives need to protect themselves against potential dangers from their surroundings, yet they require constant and intimate interactions with the same environment for their survival. The immune system is instrumental for protection against invading organisms and their toxins. The immune system consists of many cell types and is highly integrated within other tissues. Immune activity is particularly protected at surfaces that separate the host from its environment, such as the skin and the gastrointestinal tract. This enables protection of other directly or indirectly also enables environmental factors to influence the maturation and function of immune structures and cells. Recent work has indicated that the diet in particular is able to influence the immune system and thus affect the development of inflammatory disease. This review aims to highlight recent work on how external factors, with a focus on those derived from the diet such as vitamin A, can have a direct or indirect immunomodulatory influence on the activity and function of immunity.



Nature Medicine 2015; 21: 709-717

Development of GALT immune Function

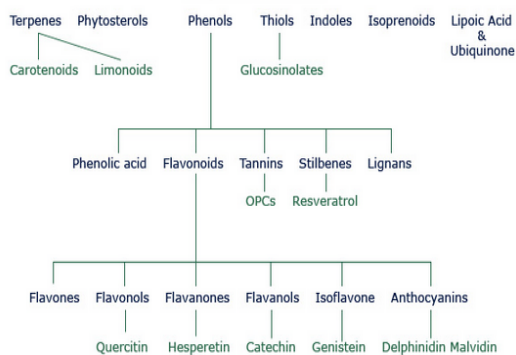


Phytochemical Regulation of NeuroendocrineImmune Networks



**Food is Much More than We Thought for the
Previous 100 years in the Western World**

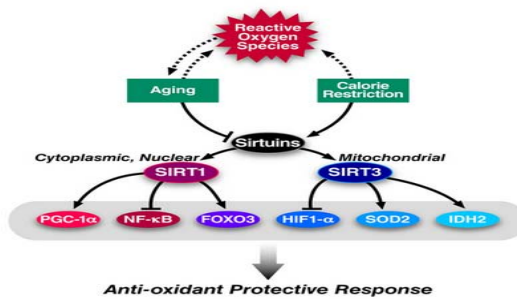
Phytochemicals



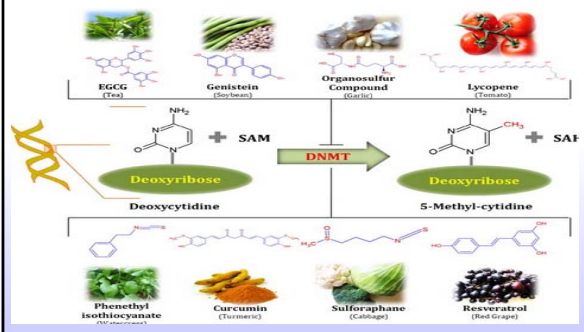
The Sirtuin-Histone Deacetylase Story

Upregulation of Sirtuin Activity by
Specific Phytochemicals

Sirtuins as Regulators of Gene Expression



Foods and Phytochemicals that Influence Genome Methylation and Sirtuins



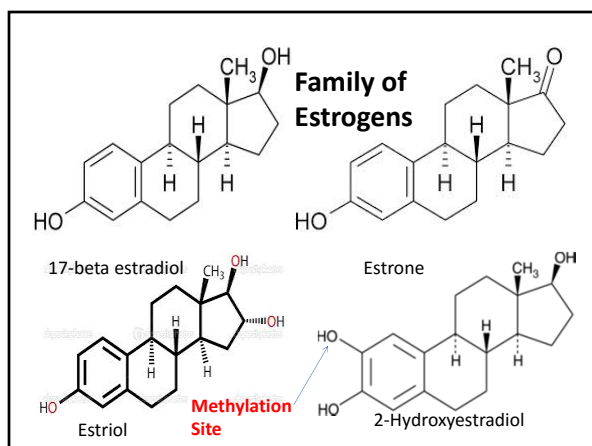
Example of How Phytochemicals Influence the Endocrine System

Elizabeth Rogan, Ph.D.

Phytochemicals and Estrogen Metabolism



- PROFESSOR AND CHAIR
- Department of Environmental, Agricultural & Occupational Health
- College of Public Health
- Professor
- Eppley Institute for Research in Cancer and Allied Diseases
- University of Nebraska Medical Center





- Gynecol Oncol. 2000 Aug;78(2):123-9.
 - **Placebo-controlled trial of indole-3-carbinol in the treatment of CIN**
 - “Thirty patients with biopsy proven CIN II-III were randomized to receive placebo or 200, or 400 mg/day I-3-C administered orally for 12 weeks”.
 - “None (0 of 10) of the patients in the placebo group had complete regression of CIN. In contrast 4 of 8 patients in the 200 mg/day arm and 4 of 9 patients in the 400 mg/day arm had complete regression based on their 12-week biopsy”.

