the general science journal

CORE RESEARCH ON MALNUTRITION

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Food to Brain & Brain To Food

The basic idea of **FtoB//BtoF** proposal is to develop an innovative project to change the obsolete conception about nutrition based on a thermodinamic and mechanical equivalence berween food and energy, normally measured in "calories" for the diets,; a conceptual change based on Nutrigenomics aim to go forward an advancement of understanding human nutrition for improving **KBBE** (Knowledge based Bio-Economy)

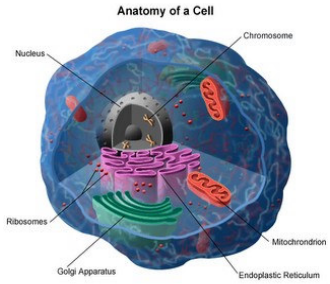
Looking to operate this change the fundamentel endeavour is to modify the current trends about Food nutrition favouring a **Brain for Food** conceptiual innovation , this because nutrition till now remains very much a part of popular culture, and the beliefs, practices, and dietology couseling, in a obsolete culture that worldwide affect its eating practices of malnutrition.

Current Trends

It is a pity to know that there has been today an increasing trends toward food quantitative consumerism, a trend that is reflected in more people eating away from home withouth thinking about the need to to eat functional foods oriented to the metabolic guidelines of the proper DNA that also establish to favour ethnic diversity in diets. Mainstream populations, in **developed countries**, want low-calorie, low-fat foods, as well as , natural, and fresh ingredients. Internationally, there has been a simple "quantification in Calories of diets" through the growth and use of fast-food restaurants and convenience foods, in pratics "**malnutrition**" In **developing countries** there is still a need for some basic foods, and governments and the food industry are working to develop high qualitative products that can reduce international food shortages and **nutrient** deficiency problems, in practics a different kind of "**malnutrition** ". With the goal to overcome this status of current trend that get also a "**malnutrition** " gap between Europe and Africa, EGOCREANET & Collaborators launch the ***"FtoB//BtoF"*** proposal to ameliorate the contemporary research about nutrition and to innovate the Brain/Body health especially through a better knowledge of "***mitochondrial metabolism***" of ATP, Eme , Colesterol etc.. , in order to develop new criteria of "**personalized diets**" favouring to overcome **Micronutrient Deficiencies.**

The above are the preliminary ideas for reply to the call **KBBE.2010.2.2-03**: **Identifying research needs on malnutrition in Africa** - Activity 2.2 Fork to farm: Food (including seafood), health and well being.

Our conceptions of how malnutrition endured early in life affecting brain/body development ,have evolved considerably since the 1999s when **Alexander Tzagoloff** descovered the propagation of mitochondria depends on the expression of a small number of mitochondrial genes **(mtDNA).**
Mithocondria (Bacterium sised endosymbiontic organelles) residing in most of our cells, convert metabolites from food into biologically form of energy (adenosine triphosphate) **ATP.**
Mitochondria are the only non-nuclear constituents of the cell with their own DNA **(mtDNA)** and a proper system for synthesizing RNA and various proteins. This remarkable capability reflects their descent from ancient bacteria. Each cell contains only one DNA in the nucleus, but hundreds or even thousands of mitochondria and **mtDNAs.** Tissues with high demands for energy, such as brain, and eye, muscle, heart etc.. are particularly vulnerable to mitochondrial propagation of defects or diseases. At fertilization all mitochondria in the zygote come from the maternal oocyte; thus, both **mtDNA** and most of mtDNA-related diseases are maternally inherited. Mithocondrial diseases produces a strong decrease of ATP metabolism that may sometimes be remedied by providing people with micronutrients, antioxidants and vitamins so that the project **FtoB//BtoF** would favour the identification of brain-specific micro nutrients that support function and metabolic biorectivity underlying both, body heath and neuroprotectant activity, through a better mitochondrial functioning.



http://t2.gstatic.com/images?q=tbn:w5j6enZNDa5DAM:http://www.mitochondrialdnatesting.com/images/mitochondrial-dna-testing.jpg

Besides recent findings of the function of mitochondria propagation in the all cells, including neurons, indicate that the malnutrition of infants and kids,may be strongly related to a decrease of mithocondrial proliferation; so that the endosymbiotic function of Mitochondria become critical for the functional development multicellular organs of the human body and brain. In particular the deficit of mitochondrial propagation in **neurons** depresses cognitive and emotional responses generating a cascade of stressful events during the adult life . The stress conditions, sometimes become more dangerous than cognitive deficits due to hunger or malnutrition **.** The age range of critical vulnerability to these long-term effects that links malnutrition (hunger and eating disorders) to mitochondrial propagation and stress conditions, may be much greater than was suspected before , so that a research on se section of **Food To Brain** project need to verify that also minimal amount of malnutrition can generate long-term alterations of emotional behaviour that strongly limits the opporunity to enrich a well being of poeple during their life.
Furthermore the high mutation rate of **mtDNA** in relation to the nuclear-DNA (nDNA) not only is important in aging and stress behaviour, but has anthropologic and forensic ramifications. Analysis of **mtDNA mutations** in isolated ethnic groups has shown that each group contains a stereotypical set of naturally occurring mutations not associated with disease ("neutral polymorphisms") . This discovery has opened up the new field of molecular genetic-anthropology and in particular become important field for the development of **Nutrigenomics** in order to favour **" personalized diets "** for health and well being of people tacking in consideration the needs of mithocondrial methabolism in relation to the ***various ethnies*** of the world.

Biblio ON LINE :

FtoB//BtoF : preliminary proposal : http://www.edscuola.it/archivio/lre/FtoB_BtoF.pdf

A.Tzagoloff : http://www.columbia.edu/cu/biology/faculty/tzagoloff/ ; spud@cubpet.bio.columbia.edu

Mithocondria & Micronutrients : http://dsz.uniss.it/convegno_nutraceutica_2006/Cairo-Sassari%2006.pdf

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