EC-US cooperation in the area of obesity research

20th meeting of the EC-US Task Force on Biotechnology

Research

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Barcelona, SP

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U.S. Department of Health and Human Services
Potential of new technologies

Bioinformatic
Building coherent models for physiology
Oomics (nutrigenomics, metabolomics, transcriptomics, etc) – Identifying molecular interaction, metabolic pathways

Imaging techniques (MRI, US, PET) – Non-invasive techniques for visualization of consumption and digestion

‘-omics’ Bioinformatics

Bioanalytics
Nanotechnologies
Microsensorics

Bioimaging
Bio-optics
Integrative Physiology

Bioimaging Cognitive Sciences

Neuroimaging
Cognitive Sciences
Behavioural sciences

Micro, nanotechnologies
Targeting delivery of nutrient to organs, cells
Modifying structure (fibrillar, microemulsions)
Encapsulation for slow release of flavours, fragance or bioactive comp. or protection against ext. factors such as heat, acid, etc

Cognitive sciences
Neuro-imaging
Understanding of consumer behaviour
Visualization (brain) for subjective pleasantness of food, satiety, hunger, addiction
Symposium at 6th annual meeting of ISBNPA: Neuroimaging and its potential application to the study of food intake (OSLO, NO)
Neuroimaging in Obesity Research (R01)

Participating Organizations

- National Institute of Diabetes and Digestive and Kidney Diseases
- National Institute on Drug Abuse
- National Institute of Biomedical Imaging and Bioengineering

To fund studies using neuroimaging approaches in animals and human subjects to study the many interacting roles of the brain in obesity and its pathogenesis and complications

Earliest Anticipated Start Date(s): December 1, 2009
FP7 Obesity Projects

- NEURO FAST: The Integrated Neurobiology of Food Intake, Addiction and Stress
- FULL4HEALTH: Understanding food-gut-brain mechanisms across the lifespan in the regulation of hunger and satiety
- HAB-EAT: Determining factors and critical periods in food habit formation and breaking in early
Supplement to Annals of Behavioral Medicine: August 09

Decision Making in Eating Behavior: Interacting Perspectives from the Individual, Family, and Environment

April 14 - 15, 2008

Lister Hill Center Auditorium
NIH Campus, Building 38A
Bethesda, MD
2009 Workshop

- EC-US workshop "Early life programming of obesity"
- A satellite congress of ECO 2009
- [http://www.diogenes-eu.org/ECO2009/Programme.htm](http://www.diogenes-eu.org/ECO2009/Programme.htm)
- Date and venue: 5-6 May 2009 in Noordwijkerhout, NL
- Purpose: to bring together experts from different disciplines in order to better understand the effects of early nutrition programming on obesity
Program Agenda

- **Julie Mennella** - *Contribution of genes and experiential factors to individual differences in taste preferences and eating behaviour among children* - Monell Chemical Senses Center, Philadelphia, Pennsylvania, USA
- **Clare Adam** - *Programming the central energy balance regulatory system* - University of Aberdeen Rowett Institute of Nutrition & Health, UK.
- **Susanne Ozanne** - *Programming the appetite regulatory system* - University of Cambridge, UK
- **Boyd E. Metzger** - *Gestational Diabetes, A Risk Factor for Obesity and Diabetes in Later Life* - Northwestern University, Chicago, USA
- **Berthold Koletzko** - *Long-term consequences of early feeding on later obesity risk* - University of Munich, DE
- **Nicolas Stettler** - *Future perspectives of early nutrition programming to tackle obesity* - Children's Hospital of Philadelphia, USA
Selected Research Thoughts

- Better understand influence of early nutrition, maternal obesity, diabetes and gestational diabetes on health outcomes of infant programming of fetal and infancy taste and feeding
- Effect of the environment (endocrine disrupters, epigenetic)
- Characterize rewarding properties of food
- Characterize the satiating effects of foods and flavors
- Collaborative efforts to follow-up on perinatal clinical trials
Other interactions

In October 2009, meetings organised with research funding agencies and other institutions (NIH, USDA, NSF, JIFCAN, University of Maryland, IFPRI, World Bank) to stimulate greater interaction on research initiatives and collaborations and to foster dialogue upon obesity and nutritional sciences.
Main outcomes

Publications of topics in WP2011

- Translation mechanisms for targeting interventions on micronutrients in Asia
- Long-term influence of early nutrition on health
Workshop on new technologies and innovations to tackle obesity
Brussels, 16 November 2010

- Double burden of malnutrition
- Childhood obesity
- Influence of chemicals in the environment on obesity
- Converging technologies, innovations and obesity (nutrigenomics, neuroimaging, etc)
- Identification of future research needs