Speaker: Dr. Claudi Mans

FRIDAY morning, 25 September

Opening lecture

9:00	**“Hesitations of an extra-terrestrial scientist: what's chocolate?”** An alien visiting Earth discovers a strange object on the ground (chocolate??). To identify it, he proceeds to carry out various tests and analysis. In his ship it undergoes mechanical, thermal and electrical tests, also with some chemical proofs.	

Dr. CLAUDI MANS TEIXIDÓ

B.Sc. and Ph.D. in Chemistry for the University of Barcelona. Emeritus Professor of the Department of Chemical Engineering, UB. He has served as director of the Department of Chemical Engineering, dean of the Faculty of Chemistry and delegate of the UB for the coordination of the Campus on Food Sciences. He has written textbooks and books about every-day science like "Tortilla quemada" ("Burned omelett"), "Los secretos de las etiquetas" ("The secrets of the labels"), or "Sferificaciones y macarrones" ("Spherifications and macaroni"), papers, contributions to congresses and conferences, including both research and vulgarization items. Several awards, the last the National Award of Chemistry of the ANQUE (National Association of Spanish Chemists).

Speaker: Dr. Ramon Estruch

FRIDAY morning, 25 September

Session 1: Cocoa as cardioprotective agent and health claims

9:30	**"Cocoa, polyphenols and cardiovascular disease"** The ambitious study PREDIMED evaluated the effects of a Mediterranean Diet and its main components, as is chocolate/cocoa and several other polyphenol sources, on the primary prevention of cardiovascular disease in high-risk patients.	

Dr. RAMÓN ESTRUCH

Senior Consultant at the Internal Medicine Department of the Hospital Clinic (Barcelona) where he has worked since 2002. He is also Associate Professor in the School of Medicine at the Barcelona University since 1996. Among the several research lines developed he is focused in alcohol consumption on heart, liver and brain and cardiovascular effects of Mediterranean diet. Prof. Estruch is the leader of the Thematic Network "Mediterranean Diet and Cardiovascular Disease" from the ISCIII (Spain). Among other projects involving toxic effect of alcoholic beverages, effect of moderate alcohol/wine consumption on inflammatory markers and atherosclerosis, in 2003, he started an ambitious study (PREDIMED) to evaluate the effects of a Mediterranean Diet and its main components on the primary prevention of cardiovascular disease in high-risk patients, into which almost 7,500 patients were enrolled.

Speaker: Prof. Dr. Hans Verhagen

FRIDAY morning, 25 September

Session 1: Cocoa as cardioprotective agent and health claims

10:00	**"Status of health claims in Europe - focus on antioxidants and chocolate"** As concerns "cocoa" and "chocolate", a total of 12 generic (article 13.1) health claims where found not scientifically substantiated by EFSA and hence not authorised, but 2 article 13.5 health claims on "cocoa flavanols" were found scientifically substantiated and subsequently authorised.	

Prof. Dr. HANS VERHAGEN

Senior Scientific Advisor 'Nutrition and Food Safety' at the National Institute for Public Health and the Environment (RIVM), The Netherlands. He studied at the Universities of Nijmegen (NL), Paris (FR), and Maastricht (NL). He worked in contract research (TNO, NL) and for industry (Unilever). He is board-certified as nutritionist and as toxicologist. He is member of the EFSA-NDA Panel from 2006. Current interests are health claims, integrated benefit-risk, novel foods, food safety, food additives, food fortification, biomarkers, antioxidants, food reformulation, nutrient profiles, logo's, food security. Since 2009 he is a visiting professor at the University of Ulster (Northern Ireland).

Speaker: Prof. Mauro Serafini

FRIDAY morning, 25 September

Session 2: Cocoa as antioxidant

11:00	**"Cocoa as modulator of oxidative stress: the pre-eminence of human evidences"** Cocoa and its main product, chocolate, have been accredited of an antioxidant action in humans. However, the extent to which cocoa is able to tune oxidative stress and the identification of the dietary molecules involved is unclear as well as the association with the endogenous redox system. There is a strong need of increasing the existing knowledge on the real efficacy of cocoa in tailored human intervention studies to clarify if cocoa might represent a unique source of redox ingredients.	

Prof. MAURO SERAFINI

Head of the Functional Foods and Metabolic Stress Prevention Laboratory at Council for Agricultural Research and Economics, Centre of Nutrition (CRA-NUT) in Rome. He is visiting Professor at the Faculty of Food Technology and Biotechnology of Zagreb University. He teaches also at the Master of Phytotherapy, Siena University; Master in Obesity prevention, Faculty of Medicine, University La Sapienza on topics related to functional food and health. Mauro is Editor of Nutrition and Aging, Frontiers in Nutrition and Ecological Sustainability and Frontiers in Nutritional Immunology with more than 100 IF research papers. Serafini has been included by Thomson Reuters in the list of international researchers displaying the greatest numbers of reports designated by Essential Science Indicators as Highly Cited Papers, ranking among the top 1% most cited for their subject field and year of publication (2002-2013).

Speaker: Dr. Daniel Ramon

FRIDAY morning, 25 September

Session 2: Cocoa as antioxidant

11:30	**"Chocolate, worms and functional ingredients"?** In recent years, our research group has worked on the search and identification of some cocoa molecules with functional properties, mainly polyphenols and peptides. Validation of their functional effects has been done using the nematode *Caenorhabditis elegans* as a model in combination with trancriptomics and metabolomics. In this communication we will focus on our results on cocoa peptides.	

Prof. Dr. DANIEL RAMÓN

PhD degree obtained at the Department of Molecular Genetics of the pharmaceutical company Antibióticos S.A. Then he moved to the University of Wageningen at The Netherlands as a post-doc. He was Professor of Food Technology at both the National Spanish Research Council (CSIC) and the University of Valencia. Actually he is CEO of Biopolis S.L., a spin-off of CSIC working in the field of microbial biotechnology, and also of Lifesequencing SL, a company of massive genome sequencing. He is author of 140 articles and co-author of 42 patents, most of them transferred as products in the market. He has obtained the European Prize of Divulgation on Science, the Prize of the Spanish Danone Institute, and the "Juan de la Cierva" National Price in Technology Transfer of the Spanish Government.

Speaker: Dr. Jordi Tresserras

FRIDAY morning, 25 September

Special session: Chocolate: Heritage and Innovation

12:10	*Chocolate: Heritage and Innovation (part I)*	

Dr. JORDI TRESSERRAS

PhD degree in Geography and History. Director of LABPATC, a spin-off of Universitat of Barcelona and IBERTUR Network based on co-working in culture, tourism and development. Associated Professor at Cultural and Heritage Doctorate and Cultural Management Postgraduate Programme at University of Barcelona. Consultant and collaborator for international organizations (Council of Europe, European Union, IADB, OEI, SEGIB, SICA, UNESCO, UNWTO, World Bank), national cooperation agencies, and private international foundations. UNESCO Expert for World Heritage sites, Immaterial Cultural Heritage, Culture in Biosphere Reserves, Creative Cities and Intercultural Dialogue Routes; and Council of Europe Expert for European Cultural Routes.

Speaker: Dr. Teresa Calvet

FRIDAY morning, 25 September

Special session: Chocolate: Heritage and Innovation

12:30	***Chocolate: Heritage and Innovation (part II)*** **"Physico-chemical characterization of new chocolate textures"** Chocolate is made up of cocoa butter (CB) crystals as a continuous body, in which tiny particles of sugar, cacao mass, and other ingredients are dispersed. Thermal treatments enabled the formation of thin layers of cocoa butter crystals with much small particle sizes and low melting point compared to normally-tempered chocolate, leading to create soft-mouth feeling.	

Dr. TERESA CALVET

Associate professor of the Barcelona University. She has a degree in Geology and a Ph.D. degree in Science, both from the University of Barcelona. Her basic and applied research activity is mainly focused on the polymorphism and solid state miscibility of different materials. Her scientific activity is supported by collaborations with internationally recognized research groups from Spain, France, The Netherlands, Italy and Japan, and it appears in many scientific international papers basically belonging to the crystallography, physical chemistry and energy storage fields.

Speaker: Dr. Joshua Lambert

FRIDAY afternoon, 25 September

Session 3: Cocoa and chocolate on metabolism, metabolism of cocoa

15:15	**"Modulation of obesity-related inflammation and fatty liver disease by cocoa: a potential role for the mitochondria"** Previously, we have reported that dietary cocoa supplementation can reduce obesity-related inflammation and markers of insulin resistance in high fat-fed mice. Recently, our results demonstrate that the beneficial effects of cocoa supplementation on non-alcoholic fatty liver disease may be mediated by increases in mitochondrial biogenesis and related antioxidant response signalling.	

Dr. **JOSHUA LAMBERT**

Associate professor in the Department of Food Science and a member of the Center for Molecular Toxicology and Carcinogenesis at the Pennsylvania State University. He received a PhD in Pharmacology and Toxicology from the University of Arizona. Prior to joining the Faculty at the Pennsylvania State University, Dr. Lambert conducted post-doctoral research on cancer prevention in the Department of Chemical Biology at Rutgers University. Dr. Lambert's research program studies the prevention of cancer and metabolic syndrome by phytochemicals tea, cocoa, berries, and soy. He has published more than 80 peer-reviewed scientific papers and 10 book chapters. In 2014, Dr. Lambert was selected by Thomson Reuters for inclusion in *The World's Most Influential Scientific Minds*. He is a member of the editorial boards of *Molecular Nutrition and Food Research* and the *Journal of Nutritional Biochemistry*.

Speaker: Dr. Cristina Andrés-Lacueva

FRIDAY afternoon, 25 September

Session 3: Cocoa and chocolate on metabolism, metabolism of cocoa

15:45	**"What can chocolate and cocoa learn from metabolomics?"** Using untargeted metabolomics as a hypothesis-generating tool we have contributed to the identification of cocoa biomarkers related to food ingestion (biomarkers of intake), as well as their potential association with health (biomarkers of effect) in a high-risk of cardiovascular disease population using an untargeted HPLC-Q-ToF-MS metabolomics strategy in acute and short-term clinical trials, as well as in observational studies.	

Dr. CRISTINA ANDRÉS-LACUEVA

Associate Professor at the Nutrition and Food Science Department of the Pharmacy School at the University of Barcelona (UB) and leader of "BIOMARKERS AND NUTRITIONAL & FOOD METABOLOMICS". Member of the steering Committee JRC Foresight study - Tomorrow's healthy society - research priorities for foods and diet; The European Commission's Directorate for Research and Innovation, H2020. After her PhD in Barcelona she did her postdoctoral research at the Tufts University, Boston, USA and also worked at the Istituto Agrario di San Michele all'Adige (Italy), the Human Nutrition Research Centre of Clermont-Ferrand (France), and at the Perugia University Medical School in Italy. She has authored over 141 peer-reviewed papers in major international journals of high standard and 17 book chapters. Her H-index is 40. Coordinator of projects and contracts for research and development funded by several public and private agencies.

Speaker: Dr. Luis Goya

FRIDAY afternoon, 25 September

Session 4: Cocoa as a preventive therapy

16:20	**"Could cocoa diet be beneficial on the diabetes?"** Type 2 diabetes mellitus (T2DM) is a complex metabolic disorder characterized by sustained hyperglycemia that results from defects in insulin secretion, action or a combination of both. First *in vivo* evidence that a cocoa-rich diet may delay the loss of functional beta-cell mass and protect liver activity in order to delay the onset of T2DM will be showed.	

Dr. LUIS GOYA

PhD with extraordinary award in Pharmacy School at the University Complutense from Madrid in 1987. After a four year postdoctoral research stay in the University of California at Berkeley, he returned to Spain in 1993 to the Institute of Biochemistry (CSIC-UCM), where he studied regulation of the insulin-like growth factors (IGF) system by nutrients. For these and previous studies, the research group received the Reina Sofía National Award in 1994 on research focused on prevention of deficiencies. He is currently a CSIC-affiliated research investigator at the Department of metabolism and Nutrition in the ICTAN, where he is studying on the biochemical and molecular mechanisms of action of bioactive compounds from the diet.

Speaker: Prof. Dr. Margarida Castell

FRIDAY afternoon, 25 September

Session 4: Cocoa as a preventive therapy

16:50	**"Cocoa in the prevention of allergy"** Allergy is an adverse immune response produced by the activation of Th2 lymphocytes. We have studied the effect of cocoa on rat allergy models. These preclinical studies demonstrate the influence of cocoa diet on antibody synthesis and also in the anaphylaxic response.	

Prof. Dr. MARGARIDA CASTELL

Full professor in the Department of Physiology in the School of Pharmacy, and a member of the Institute for Research on Nutrition and Food Safety at the University of Barcelona. She is also founding member of the International Society of Chocolate and Cocoa in Medicine. Dr. Castell is graduated in Pharmacy and she obtained her PhD from the University of Barcelona. Dr. Castell's research is focused on the immune system and is leader of the research group named Autoimmunity and Tolerance. Since years 2000 her research is centred on the effects of food components on the immunity. She has been responsible for projects founded by competitive grants and also for projects in cooperation with the industry. She has published about 100 peer-reviewed scientific papers and almost 20 book chapters. She teaches in the degrees of Pharmacy, Nutrition and Food Sciences and also in several masters. She has served as a grant reviewer for the Spanish Science Ministry and also for France, Argentine and Rumania and she is a member of the editorial board of *Nutrients*.

Speaker: Dr. Francisco A. Tomas Barberán

SATURDAY morning, 26 September

Session 5: Cocoa and microbiota

9:30	**"Interaction of cocoa polyphenols with gut microbiota: potential health effects in humans"** The absorption of polyphenols, such as those present in cocoa, in the gastro-intestinal tract is limited and they reach the colon almost unaltered where they interact with the colon microbiota. The colon microorganisms have a two-way relationship with cocoa polyphenols, as these phytochemicals in one hand modulate the microbiota population, and on the other hand the microbiota transforms polyphenols producing metabolites that differ from the original cocoa constituents.	

Dr. FRANCISCO A. TOMÁS BARBERÁN

PhD in Pharmacy, Valencia University, Research Professor of CSIC in Murcia (Spain). Co-author of more 300 publications in scientific journals of the areas of Phytochemistry, Agricultural Chemistry, and Food Science and Nutrition. These articles have been cited over 12000 times. He is interested in the role of phenolic phytochemicals on food quality and health. His current research aims to the identification of those food constituents that provide health benefits, the mechanisms by which they exert their effects, their bioavailability and the efficacy in humans and the role of gut microbiota on polyphenols metabolism and inter-individual variability. He has carried out research in laboratories from England (Reading), Switzerland (Lausanne), France (Lyon), and the USA (Davis). His research has also been oriented to the transfer to industry and he has registered 6 patents of which 3 have been licensed and derived products are actually in the market.

Speaker: Dr. Francisco J. Pérez-Cano

SATURDAY morning, 25 September

Session 5: Cocoa and microbiota

10:00	**"Cocoa modifies interaction of microbiota with intestinal immune system"** Certain molecules of the micro-organisms are recognized by the toll-like receptors (TLRs) in the body cells, mainly in the intestinal epithelial cells and in the immune cells. Dysregulation in the activity of such receptors can lead to the development of chronic and severe inflammation as well as immunological disorders. Among components present in the diet, cocoa components have been suggested as dietary factors able to modulate TLR-mediated signalling pathways.	

Dr. FRANCISCO JOSÉ PÉREZ CANO

Ph.D. in Physiology for the University of Barcelona (UB), 2004. "Professor titular" of the Department of Physiology in the Faculty of Pharmacy. Member of the Research Group of "Autoimmunity and Tolerance", its research has been focused in the Immunonutrition area, mainly regarding the effects of breast milk, probiotics and cocoa on intestinal health. He has carried out research in laboratories from USA (Irvine, California) and England (Reading). He has written a educational book about immunonutrition and more than 50 scientific papers and book chapters, more than 150 contributions to congresses and conferences, including both research and vulgarization items. He teaches in several degrees (Pharmacy, Nutrition and Food Sciences) and also in some masters. He is "ambassador" in Barcelona of the Spanish Society of Immunology (SEI) and member of the Research Commission of the Catalan Society of Immunology (SCI).

Speaker: Dr. David Vauzour

SATURDAY morning, 25 September

Session 6: The effects of cocoa on the nervous system

12:40	**"Cocoa flavonoids and brain health: Physiological and molecular mechanisms underpinning their beneficial effects"** A growing number of dietary intervention studies in humans and animals and in particular those using cocoa flavonoids, have been proposed to exert a multiplicity of neuroprotective actions within the brain, including a potential to protect neurons against injury induced by neurotoxins, an ability to suppress neuroinflammation and a potential to promote memory, learning, and cognitive functions.	

Dr. DAVID VAUZOUR

PhD from the University of Montpellier (France) in 2004. His research over the last 10 years, based at the University of Reading (2005-2011), and at the Norwich Medical School, University of East Anglia, UK (2011-present), has focused on investigating the molecular mechanisms that underlie the consumption of diets rich in fruits and vegetables and a decreased risk of (neuro)degenerative disorders. To date Dr. Vauzour has published 53 peer reviewed articles and 10 book chapters (h-index 23) and currently serves as the Associate Editor for the journal "Nutrition and Aging" and sit on the board committee of "Groupe Polyphenols". In addition, he is a member of the editorial board of "Neuroscience and Medicine" and the Chair of the expert group and workshop organising committee for the ILSI Europe "Mental Performance Task Force".