



International Center  
for Scientific Debate  
BARCELONA

UNA INICIATIVA DE:



Obra Social "la Caixa"

# 2014

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# CALENDAR OF ACTIVITIES

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Top-notch scientific debates

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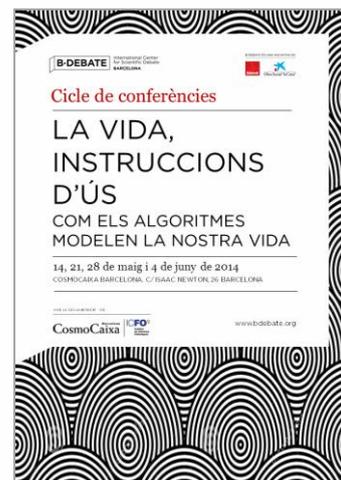
# 2014 CALENDAR OF ACTIVITIES

## LIFE, AN INSTRUCTION MANUAL HOW ALGORITHMS MODEL OUR LIFE

*Algorithms are groups of instructions that are used to execute problem-solving tasks. Since ancient Babylonia, 4,500 years ago, humanity has developed mathematical theorems based on algorithmic calculations to find systematic solutions to problems of all kinds and levels of complexity. Today their number and fields of application are endless.*

*Our daily life is completely enveloped and conditioned by activities that are only possible thanks to algorithms. The appliances we use to make breakfast, the current economic/financial situation and the weather report in the newspaper, the phones and devices we use to communicate, the therapeutic and diagnostic equipment healthcare professionals use to heal us, the search engines we use online, the alarms and cameras that watch over us and keep us safe, the most sophisticated espionage tools, the complex machinery used to design and construct buildings, planes, roads, and all research activity, require algorithms to generate new knowledge and new technology. In short, our knowledge-based economic model is nourished by and needs the development of algorithms.*

COSMOCAIXA BARCELONA. C/ ISAAC NEWTON, 26. BARCELONA  
May, 14<sup>th</sup>, 21<sup>th</sup> and 28<sup>th</sup> and June 4<sup>th</sup>, 2014



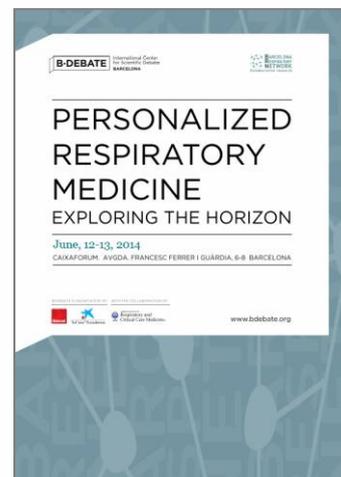
## PERSONALIZED RESPIRATORY MEDICINE EXPLORING THE HORIZON

*Respiratory diseases are highly prevalent among the general population, generating an urgent global health problem. An estimated 5% of the world population has asthma, 10% of the population over 40 has COPD and Obstructive Sleep Apnea Syndrome affects 4% of the adult population. Lung cancer has become the most common cancer among men, as it is expected to be for women in the near future, and viral and bacterial respiratory infections are one of the most frequent causes of medical visits. Furthermore, the number of patients suffering from respiratory diseases is expected to increase significantly by 2050 as a result of the concentration of the world population in cities, deteriorating air quality and the ageing population.*

*The latest advances in the field of human genetics are outlining a paradigm shift in the way medicine tackles diseases: personalized medicine. In this new approach, there are no diseases, only patients. Efforts focus on treating the specific individual in question, adapting treatments to the individual biological characteristics of each patient.*

Scientific leader: Prof. Àlvar Agustí, director Torax Institute, Hospital Clínic de Barcelona

CAIXAFORUM. FRANCESC FERRER I GUÀRDIA, 6-8 BARCELONA  
June, 12<sup>th</sup> and 13<sup>th</sup>, 2014



# 2014 CALENDAR OF ACTIVITIES

## 50 YEARS OF HISTONE ACETYLATION BARCELONA CONFERENCES ON EPIGENETICS AND CANCER

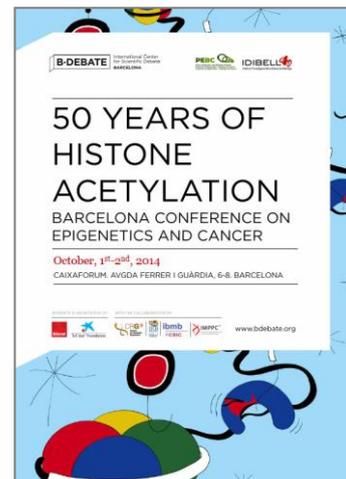
*One of the biggest challenges in biomedicine today is understanding how signal pathways regulated by the interaction of genetic programming and environmental factors impact on the epigenetic plasticity of chromatin in health and disease. This knowledge could be exploited for the generation and improvement of novel tools for the prediction, the diagnosis, and eventually the individualized treatment of cancer.*

*This meeting celebrates the 50th anniversary of the paper "Acetylation and methylation of histones and their possible role in the regulation of RNA synthesis" published by V.G. Allfrey, R Faulkner and A. E. Mirsky which was published in PNAS in 1964. The paper was seminal in establishing the relationship between histone post-translational modifications and gene expression. It also takes into account that during many years since then, Barcelona has been one of the cities in Europe with the largest concentration of researchers working on histones and chromatin.*

Scientific leader: Prof. Àlex Vaquero, Head of the Chromatin Biology Research Group, Cancer Epigenetics and Biology Program, Institut d'Investigacions Biomèdiques de Bellvitge (PEBC-IDIBELL)

CAIXAFORUM. FRANCESC FERRER I GUÀRDIA, 6-8 BARCELONA

October, 1<sup>st</sup> and 2<sup>nd</sup>, 2014



## ENVIRONMENT AND CHILD DEVELOPMENT THE CHALLENGES IN THE GLOBAL CONTEXT

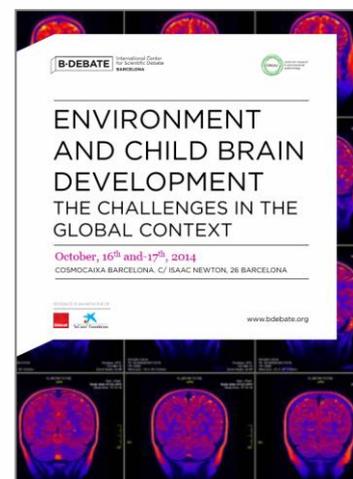
*To test children and adolescents from the general population is a matter of concern in order to understand the patterns of normal brain development. Neuroimaging has barely been used in epidemiological studies of large populations. It is time for a debate between neuroscientists and neuro-epidemiologists interested to develop neuroimaging assessments in these important studies.*

*The meeting will bring together leading neuroscientists, neurologists, neuropsychologists, psychologists, neuro-epidemiologists. The debates will focus on several major issues like find a consensus on the range of ages during childhood and adolescence to study the brain's structure and function, the need to determine the role of neuroimaging future research to characterize brain maturation, or discuss public health policies and preventive treatments to develop in short and medium term.*

Scientific leader: Prof. Jordi Sunyer, director of the Centre for Research in Environmental Epidemiology (CREAL), research center of the ISGlobal Alliance

COSMOCAIXA. C/ ISAAC NEWTON, 26. BARCELONA

October, 16<sup>th</sup> and 17<sup>th</sup>, 2014



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# 2014 CALENDAR OF ACTIVITIES

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## BIG DATA IN BIOMEDICINE CHALLENGES AND OPPORTUNITIES

*In the Biomedical field, researchers, health care professionals and patients are generating large amounts of data from an array of devices such as genomic sequencing machines, high-resolution medical imagers, electronic health records, and smart phone applications that monitor patient health. The greatest challenge faced by bioscientists today is the ability to handle and use this flood of information easily and intuitively.*

*The ability to better collect, store, organize, integrate, analyze and share the Biomedical Big Data provides opportunities to enhance understanding of disease onset and progression, and accelerate the translation of data to bedside applications that advance the detection, diagnosis, treatment and prevention of disease. Yet, many challenges in these areas are still to be addressed.*

Scientific leader: : Director of the Research Programme on Biomedical Informatics GRIB (UPF-IMIM) and Scientific Director at Bioinformatics Barcelona (BIB)

CAIXAFORUM. FRANCESC FERRER I GUÀRDIA, 6-8 BARCELONA  
November, 11<sup>th</sup> and 12<sup>th</sup>, 2014

