



Dipartimento di Fisica e Sezione INFN di Torino



PHYSICS COLLOQUIUM

Friday 2 December 2016, 14:30, Aula F

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The epigenome – a new code superimposed on the DNA

Since the sequencing of the human genome, scientists embarked on a long trip trying to decipher how a long DNA sequence based on only four letters - the genome - could originate the complexity of life. On one hand, all the cells in a human body share the same genome, while they originate remarkably different organs and tissues. On the other hand, it became clear that the environment where we live in, the food we eat, they all deeply influence our cells. Eventually, it all depends on which subset of the genome is used, and how its activity is modulated. The fine tuning of this process is controlled by a new code, the epi-genome. This is superimposed on the genome, and critically contributes defining which genes are needed in space (in the various organs), in time (during aging), and in a specific environmental setting (during stress or starvation) in our body. This seminar will illustrate our current understanding on this emerging layer of complexity, including how we can read and possibly modify the epigenetic code.

