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invites to a seminar by

Professor Alfredo Ferro

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Computational pathway analysis and simulation in cancer

28th of June 2019 at 12.00 p.m.

Venue: Centre of New Technologies, Banacha 2C,
Lecture Hall 0142 (Ground floor)

Host: Dr. Marta Dudek

Abstract:

The key role of microRNAs and other ncRNAs in many biological processes, functions and diseases has been widely demonstrated. Their diagnostic and therapeutic potential is being exploited as one of the most promising directions. Bioinformatics and in-silico analysis are playing a key role in this context. In this talk we survey a novel series of techniques developed by our group to improve this methodology by computing “perturbation” of pathways and their endpoints using a topology-based approach. Starting from gene/microRNA expressions (coming from NGS or other techniques) our algorithms are able to produce the list of most perturbed pathways corresponding to a given phenotype. Furthermore, our tools are able to extract the local areas of biological pathways which might represent more accurately the biology underlying a patient condition or a specific phenotype. Finally, the same algorithms can be used to simulate the alteration of a set of molecules in a given organism. Application to cancer biology will be illustrated. Finally a synthetic biology technique to design target-specific artificial microRNA will be mentioned.