

Special Advanced Course on "Omics & multi-omics "

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Abstract

Omics (aka high throughput molecular screens) have revolutionized molecular biology. From microarray to sequencing technologies the possibility to monitor in one experiment thousands of parallel molecular activities have changed our way to investigate and understand biological functions. Systems biology has offered tools to process these data, from gene ontologies, to differential analysis methods, to multiple hypotheses correction, these approaches represent a fundamental part of the basic toolkits for bioinformaticians. Still novel challenges are already awaiting responses: decreasing costs, increasing precision and growing heterogeneity trigger novel ways to address biological questions: multi-omic approaches, which definition is currently under-way are one of the novel challenges in biology.

Synopsis

- Dogma of molecular biology & updates: miRNAs, epigenomic modifications, metagenomics
- mRNA Microarrays an exemplar for high-throughput biology
- Sequencing technologies overview, focus on Illumina
- Differential & Enrichment analysis
- Network approaches to omics
- Multi-omics integration: introduction & open challenges

Timetable

March 2: 10-12am and 2-5pm

March 3: 10-12am and 2-5pm

March 4: 10-12am and 2-5pm

March 5: 10-12am and 2-5pm

Venue

Via San Giacomo 9/2 - Lab C