

Scritto da Red.

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Friday
May 7, 2021
15.00 (GMT+1)

**Computational and Quantitative Biology
Lecture Series**

The seminar will be held on line. Please register at <https://bit.ly/3xOkym>.
You will receive an invite with the link to the seminar.

Feedback control as a tool to understand complex dynamics in mammalian cells

Complex non-linear dynamics orchestrate mammalian cell phenotypes in health and disease. In this talk, I will start discussing combined experimental and computational approaches to model multiscale gene expression, proliferation and spatial dynamics in both embryonic stem cell cultures and in intestinal crypts. I will then propose synthetic biology and applications of control theory strategies to directly engineer gene expression dynamics in living cells, proposing this as a methodology to both directly couple dynamics to phenotypes, and to design superior culture protocols and combination therapies.

Lucia Marucci is an Associate Professor in Systems and Synthetic Biology, and an Engineering and Physical Sciences Research Council (EPSRC) Early Career Fellow at the University of Bristol (UK). After completing an MSc in Mathematics and Data Science (University of L'Aquila), she obtained a PhD in Automatic Engineering at the University Federico II (Naples), working on models of synthetic gene regulatory networks engineered within the Telethon Institute of Genetics and Medicine (TIGEM). She then obtained an EMBO Long-Term Fellowship to study the role of signalling pathway dynamics in stem cells at the Centre for Genomic Regulation (CRG, Barcelona). Since 2013, she leads in Bristol an interdisciplinary research group, which combines computational and experimental approaches to understand and control complex dynamics and phenotypes in living cells.

Dr. Lucia Marucci
EPSRC Early Career Fellow
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With the contribution of: Hosted by:

ARIANO IRPINO – Il prossimo seminario di biologia computazionale, organizzato dall'Università Federico II di Napoli, e sponsorizzato da Biogem, vedrà come ospite la professoressa Lucia Marucci.

L'incontro, in programma nella consueta modalità in streaming, sarà l'occasione per approfondire le dinamiche complesse e non lineari che orchestrano il fenotipo cellulare in condizioni fisiologiche e patologiche.

La professoressa Marucci discuterà degli approcci computazionali e sperimentali messi in atto per il *multiscale modelling* (o modellazione multiscala) delle dinamiche di espressione genica, proliferazione e spaziali, nelle cellule staminali embrionali e nelle cripte intestinali.

Nel suo intervento, Lucia Marucci, professoressa associata in Biologia sintetica e dei sistemi all'Università di Bristol, ma con un passato nell'ateneo napoletano, proporrà l'impiego della biologia sintetica (synthetic biology) e della teoria del controllo, come metodica innovativa per accoppiare (abbinare) le dinamiche al fenotipo, per definire avanzati protocolli di coltivazione cellulare, e per disegnare nuove terapie di associazione (o combinate).