



UPO UNIVERSITÀ DEL PIEMONTE ORIENTALE
DIPARTIMENTO DI SCIENZE E INNOVAZIONE TECNOLOGICA

EVENTI DiSIT

Seminario | Seminar

26-09-2023

14:30-16:30

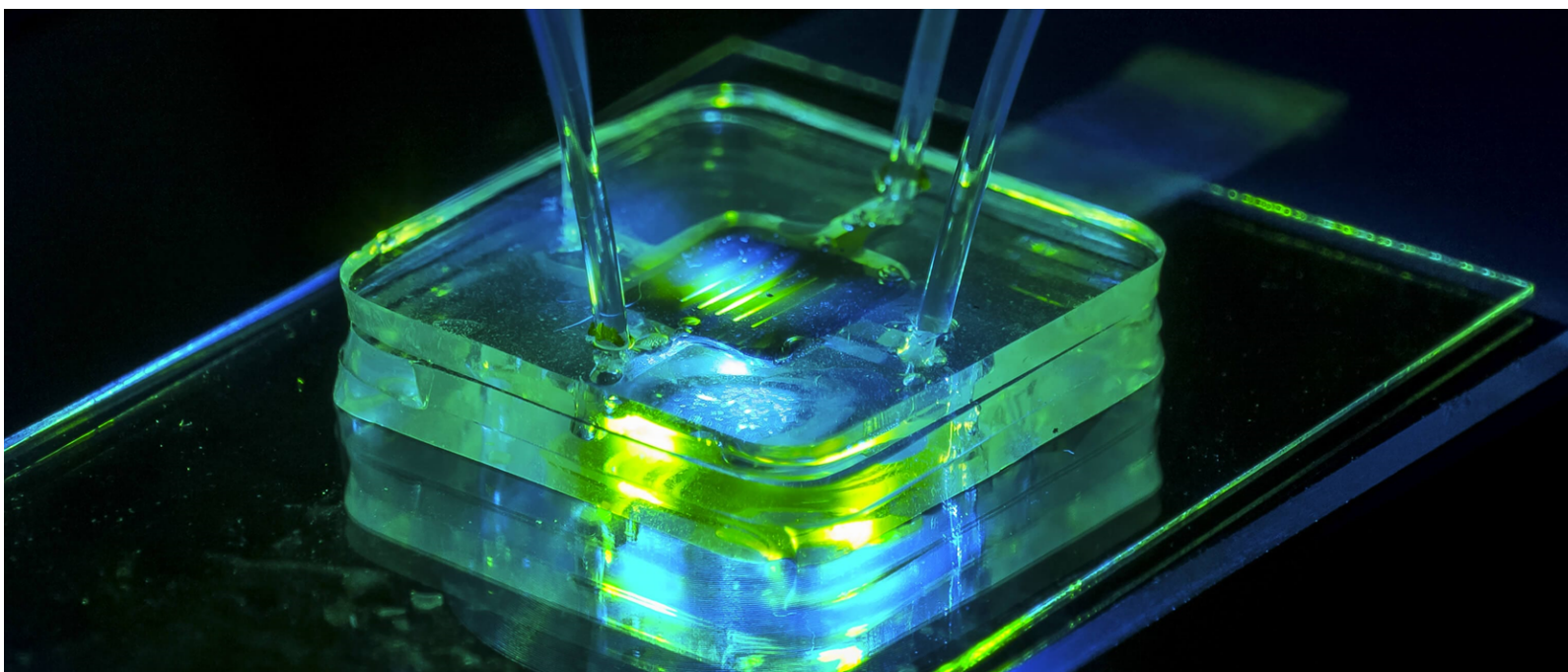
Aula 101

Cross-kingdom chips: from microbes to humans to model pathophysiologic conditions

[Dr. Giuseppe Cappellano](#)

Department of Health Sciences DISS-UPO





Micro- and nano-scaled devices have revolutionized the area of diagnostics, drug testing, analytical methods, chemical sensing, among others. Progress in microfluidic fabrication technology have led to the establishment of a chip environment as a versatile platform to model pathophysiological conditions. The greatest advantage of microfluidics is the creation of a controlled microenvironment that precisely drives and controls the microfluidic flow in microchannels, improving detection sensitivity. Recently, microfluidic chips have been successfully developed for several organisms, including microbes, plants and human organs. For example, microbes-on-chip allows for the systematic study of chemical and biological interactions within a microbial community, as well as bacteria mobility and motility, quorum sensing or antibiotic resistance. Plant-on-chip fluidic platforms permits the monitoring of root growth and development, as well as root-pathogen interactions. Finally, human organ-on-chip reproduces in vitro the physiological environment of a whole living organ representing a powerful tool for drug screening, including applications to organ/disease modelling and personalized medicine. The implementation of artificial intelligence in these systems makes them more advanced, thereby helping to provide a more accurate diagnosis. These miniaturized chips would help understand complex molecular networks, by determining how individual parts are integrated in time and space to form complex, dynamic cellular functions, and how cellular interactions create higher-order functions.

EVENTO APERTO A:

Docenti | Teachers, Borsisti | Research Fellows, Assegnisti | Postdoctoral researcher, Dottorandi | PhD students, Studenti | Students, Esterni UNIUPO | external UNIUPO people

SEMINARIO IN LINGUA: INGLESE/ENG

REGISTRAZIONE OBBLIGATORIA:

entro LUNEDÌ 25 SETTEMBRE 2023 ORE 12.00 tramite [modulo Google](#)

