Titolo (provvisorio): 3D cancer models as platform for drug repositioning

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Motivazione e campo di applicazione

Three-dimensional (3D) and dynamic cell cultures are necessary tools in the progression of cancer research. These can be adopted as predictive models to study the effectiveness of pharmacological or natural treatments.

Obiettivi generali e principali attività

The goal besides this work is to analyze cancer cells response to natural or synthetic compounds that are currently under study with regard to their potential as tumour antagonist (e.g. curcuma, aspirina). The novelty of the thesis will be the evaluation and measure of the effects of drugs in a dynamic environment, by using a bioreactor, that can reproduce multiple flow directions, affecting the behaviour of tumorigenic cells, embedded in a 3D hydrogel, representing the primary tumour.

The student will participate to the process of gel manufacturing and cells culture. The work will be constituted by a major experimental part (optical microscopy, fluorescence confocal microscopy, CFD) and consequent images post-production and data analysis (ImageJ).

Obiettivi di apprendimento (strumenti tecnici e analitici, metodologie sperimentali)

The goals of this thesis are:

• Optical microscopy
• Fluorescence confocal microscopy
• Cell culture
• Image analysis
• CFD

Luogo/i in cui si svolgerà il lavoro: CNR – Consiglio Nazionale delle Ricerche, Istituto IEIIT, UNIGE

Abilità e capacità richieste: Self-contained, interest in experimental work; initiative and curiosity.

Numero massimo di studenti: 1