BIO TALK: Diffuse optical monitoring for plasmonic photothermal cancer therapy personalization

CLARA VILCHES

May 30, 2023
12:30 to 13:30
Blue Lecture Room

Abstract:
Plasmonic photothermal therapy (PPTT) is emerging as a complementary technique for the treatment of malignant solid tumours. It involves the use of gold nanoparticles that can be light-activated to locally and precisely shrink tumours via heat-induced cell death. However, and as most other cancer therapies, treatment outcome varies between individuals even under the same regime, compromising PPTT outcome and hindering its clinical translation. Thus, methods that allow for personalization of therapy based on individual's physiology are needed. In PPTT, the dose of nanoparticles injected and the amount of light delivered are parameters that can be adjusted to personalize the treatment and improve its efficacy. In this work, we show how diffuse optical techniques can be used to non-invasively gather physiological properties of the tumoral tissue and relate the optical and hemodynamic parameters to the crucial variables in PPTT. We have combined diffuse optical monitoring and PPTT in a preclinical mouse model of renal cancer, and the optical data has allowed us to measure gold nanoparticle accumulation in the tumour and to relate tumour physiology with nanoparticle concentration and treatment temperatures. Our results set the basis for a toolbox that would pave the way to PPTT personalization and bring this therapy closer to clinics.

After the lecture a networking session with pizza will take place at the picnic area, outside ICFO - an opportunity to meet and talk with colleagues in an informal setting.
Participation is open to all ICFOnians
Participants interested in also attending the networking session should register here
Hosted by: Academic Affairs