



Nanoscale Organisation
and Dynamics Group

Imaging and modulating the blood-brain barrier in high-grade glioma

Caterina Brighi

ACRF Image X Institute | Central Clinical School | Faculty of Medicine and Health
The University of Sydney

Abstract

High-grade glioma (HGG) is one of the most aggressive types of brain cancers with median overall survival of approximately 14 months after standard therapy. One of the main clinical challenges in improving therapies for HGG is the highly heterogeneous nature of this type of tumour, which makes it difficult for current therapies to efficiently target the entire population of tumour cells. In particular, the heterogeneous characteristics of the blood-brain barrier (BBB) in the tumour tissue limit the efficient drug delivery to regions of infiltrating tumour. In this presentation I will give an overview of the BBB characteristics in HGG, I will discuss the use of relevant MRI techniques to evaluate the suitability of different mouse models of HGG for preclinical studies evaluating systemic delivery of new therapeutic drugs, and finally, I will show the potential of MR-guided focused ultrasound as a technique to selectively modulate the BBB and improve drug delivery to infiltrating tumour.

Profile

Caterina graduated with a Master of Science in Chemistry with Molecular Physics in 2015 from Imperial College London. Upon the award of a Medical Research Council Scholarship, she then undertook a Master of Research in Bioimaging Science at Imperial College London, from which she graduated in 2016. During her Master of Research Caterina worked at the Imperial College Comprehensive Cancer Imaging Centre on a project involving the development of peptide probes for non-invasive fluorescent and PET imaging of immune checkpoint inhibitors in breast cancer. In 2017 she moved to Australia to undertake a PhD in Medical Imaging at the Australian Institute for Bioengineering and Nanotechnology at The University of Queensland. Her PhD work focused on neuroimaging studies evaluating effective strategies to modulate the blood-brain barrier and improve drug delivery to brain tumours. Caterina was awarded a Research Training Program Scholarship by the University of Queensland, a PhD student grant by the Children Hospital Foundation, 5 student travel awards to present her work at national and international conferences, including the 2018 World Molecular Imaging Congress, and a young investigator award at the 2019 COGNO Meeting. During her PhD, Caterina has published three first-authors manuscripts and has contributed to the publication of two co-authored publications. After completing her PhD, Caterina joined the ACRF Image-X Institute in 2020 as a research associate to work on the MR-Linac project, which aims to improve the accuracy of radiation therapies in cancer treatment.

Staff and students at all levels are welcome to attend.

Venue and Time:

This talk will be held on Thursday 3 September at 3 pm via ZOOM

Meeting URL: <https://uws.zoom.us/j/96278912607?>

Meeting ID: 962 7891 2607

Password: 465332

Enquiries:

Prof. William S. Price

Ext. 0404 830 398

e-mail: w.price@westernsydney.edu.au