

Webinar June

Delivering FLASH: How Fast, Spots, Spirals and Squares?

2 June 2023, 17:00 – 19:00
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Dr. Sertorio is an Assistant Professor in the Radiation Oncology department at the University of Cincinnati College of Medicine. Dr. Sertorio developed the research area and activity at the UC/CCHMC Cincinnati proton center while enabling access and feasibility of new research project for multiple users. After serving as the Director of the Proton and Radiation Research Core service at CCHMC, he is now full time dedicated to research activity at the University of Cincinnati College of Medicine, focusing on development of new cancer therapy approaches based on photon and proton therapy (minibeam, FLASH) and tumor specific genetic/biologic features to improve cancer treatment (Head and neck squamous cell carcinoma, pancreas adenocarcinoma, medulloblastoma) outcome and radiation exposure toxicity (skin, soft tissue, brain neural progenitor cells). Development of new drugs and immunomodulatory strategies in combination with radiotherapy and translation of the results to the clinic are the main

goals of his laboratory research activity. Anastasia Velalopoulou is a Research Associate in the Department of Radiation Oncology, Perelman School of Medicine, University of Pennsylvania. Born and raised in Tinos island located in the Aegean Sea, in Greece, Anastasia received her B.Sc. (with a recognized integrated M.Sc.) in 2008, from the Department of Biological Applications and Technology of the University of Ioannina, Greece. In 2013, she earned her Ph.D. in Physiology, from the School of Medicine of the same University. Anastasia continued with her postdoctoral studies in the United States and the University of Pennsylvania and joined the field of FLASH radiotherapy in 2019, while jointly working in the labs of Constantinos Koumenis and Theresa Busch. In 2021, she reported the sparing properties of proton FLASH radiotherapy of the epithelial and mesenchymal tissues of the murine limb in the context of a sarcoma tumor. Her research efforts now focus on the elucidation of the underlying mechanisms of FLASH proton radiotherapy in various models of acute and chronic normal tissue toxicities

PRECISE Proton Research Room Experimental Coordinator and Clinical Service Liaison

Research Fellow

PRECISE, Division of Cancer Sciences

Faculty of Biology, Medicine, and Health

University of Manchester, Manchester, UK

Associated Professor

Department of Experimental Clinical Oncology

Aarhus University Hospital, Aarhus N, Denmark

MRC Investigator and Group Leader – FLASH Radiation

MRC Oxford Institute for Radiation Oncology, University of Oxford

Oxford, UK

Presentation Title: “Dose Rates for Proton Beam Scanning”

Presentation Title: “Impact of Time Structure on the Biological Response of Proton FLASH in a Mouse Model”

Presentation Title: “Beam Parameters That Induce a FLASH

Effect”Dr. John-William Warmenhoven is a research fellow in the PRECISE group at the Division of Cancer Sciences, University of Manchester. He has a Ph.D. from the University of Manchester on mechanistic modelling in the field of radiotherapy and has been part of the team that lead the commissioning of the Christie Proton Research Beamline. • Researcher and Medical Physicist from Helsingborg, Sweden.

- M.Sc. (2009) and Ph.D. (2014) in Medical Radiation Physics, Lund University, Sweden.

- 2014-2017, Post-doc on FLASH Radiation, Lausanne, Switzerland

- From 2017, Clinical Medical Physicist, Group leader on FLASH Radiotherapy, Skåne University Hospital, Sweden

- From October 2019, MRC Investigator, Group leader – Biology and Physics of FLASH Radiation, MRC Oxford Institute for Radiation Oncology, University of Oxford, UK

My research ambitions are to further improve our knowledge in the field of Medical Radiation Physics and Radiobiology. My goal is to improve on current clinical practice in radiotherapy, to achieve a more efficient patient treatment and with less adverse effect for the patients. With that goal in mind, the last eight years I have focused my research on FLASH radiation, i.e. radiation delivered at ultra-high dose rates. Currently, I am heading one of the most prominent teams in this field of radiation research, at the University of Oxford.

FLASH radiation is a novel radiotherapy technique that show great potential in improving cancer treatment. However, very little is known about the biological mechanisms behind the highly beneficial FLASH effect. My research team aims to identify these mechanisms, explain the effect, and to find the optimal way of implementing the technique in clinical practice.