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SEMINAR

Staphyloxanthin-targeting phototherapy platform to combat methicillin-resistant *S. aureus* infections

Jie Hui, Ph.D.
Wellman Center for Photomedicine
Massachusetts General Hospital & Harvard Medical School

May 25th 2022, 16:00 (CET)
Sala Magenta or ZOOM (Meeting ID: 851 6446 3549 Passcode: 156322)
https://us02web.zoom.us/j/85164463549?pwd=DPdxBtY4iw6gGr7venA_tO1-el7m_9.1

Abstract:
Antibiotic resistance in human pathogens is one of the biggest public health challenges of our time. Confronted with its rapid evolution and dissemination, there is an urgent need to develop alternative treatment strategies for drug-resistant pathogens. Here, I will present our story of developing staphyloxanthin-targeting phototherapy as an unconventional approach to specifically combat notorious “superbug” methicillin-resistant S. aureus (MRSA). I will first present our accidental discovery of staphyloxanthin, as an underlying and endogenous molecular target of blue light. I will then show how ns-short blue-light pulsed laser to dramatically improve staphyloxanthin photolysis efficiency. Finally I will discuss how the blue light illumination causes catastrophic damage on MRSA cell and how these membrane disruption mechanisms sensitize MRSA cells to reactive oxygen species-producing agents, conventional antibiotics and host immune cells.

Bio:
Dr. Jie Hui is currently a postdoctoral research fellow in Dr. Seok-Hyun Andy Yun’s lab at Wellman Center for Photomedicine at MGH and Harvard Medical School. He got his bachelor’s degree in Physics in 2012 and earned his PhD degree in Physics/Biomedical Engineering in 2017 (at Purdue University). Dr. Hui co-invented several phototherapy methods and devices to treat bacterial and fungal infections by harnessing the unique photophysics and photochemistry of endogenous chromophores inside microbes. He has published 17 peer-reviewed papers, granted 4 patents, and received numerous awards including SPIE-Franz Hillenkamp Postdoctoral Fellowship.

Organizer

Prof. Paolo Minzioni

Ph.D. Coordinators

Proff. Cristiani e Quaglini

Seminar in English
For more information: paolo.minzioni@unipv.it