

PIANOFORTE Training Course: PRO_TREAT – PROtecting while TREATing: from the basic principles of the biological effects of ionizing radiations up to their use in neurodegenerative diseases

18-22 September 2023

PRELIMINARY PROGRAM



UNIVERSITÀ
DI PAVIA

IRSN
INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE



Venue: Pavia University, 18-22 September 2023, Aula E, Cascina Cravino, via A.Bassi 21, Università degli Studi di Pavia, Pavia IT-27100, Italy

International School conceived and promoted within the EC FET Open RIA project “NECTAR” (GA #964934, H2020-FET OPEN-2018-2020 call).



Preliminary program

Monday 18.09.2023:

9-9:45: *registration*

9:45-10:30: NECTAR overview, N.Protti, Pavia University, Pavia, Italy

10:30-11:00: *coffee break*

11:00-12:30: Alzheimer's disease and ageing, G.Forloni, Mario Negri Institute for Pharmacological Research, Milano, Italy

12:30-14:00: *lunch*

14:00-15:00: radiation-matter interaction, S.Altieri, Pavia University, Pavia, Italy

15:00-16:00: NCT principles, V.Pascali, Pavia University, Pavia, Italy

16:00-16:30: *coffee break*

16:30-18:00: Design and synthesis of NCT therapeutic agents for the targeted delivery of boron and gadolinium, A.Deagostino & S.Parisotto, Torino University, Torino, Italy

Tuesday 19.09.2023:

9:00-10:30: neutron spectrometry: theory and measurements, D.Rastelli, Raylab solutions s.r.l., Italy

10:30-11:00: *coffee break*

11:00-12:30: neutron dosimetry, A.Pola, Milano Politecnico, Milano, Italy

12:30-13:30 *lunch*

13:30-15:00: Monte Carlo models for IR-induced damages in biological matter, Y.Perrot, Institut de Radioprotection et de Sûreté Nucléaire, Paris, France

15:00-16:00: Geant4 and Geant4-DNA **hands-on**, M.Hervé, Institut de Radioprotection et de Sûreté Nucléaire, Paris, France

16:00-16:30: *coffee break*

16:30-17:30: Geant4 and Geant4-DNA **hands-on**, Y.Perrot, Institut de Radioprotection et de Sûreté Nucléaire, Paris, France

17:30-18:30: Geant4 and Geant4-DNA **hands-on**, V.Pascali, Pavia University, Pavia, Italy

Wednesday 20.09.2023:

9:00-10:00: effective vehiculation of B/Gd compounds towards brain, D.Alberti, Torino University, Torino, Italy

10:00-11:00: in vivo B/Gd concentration measurements by theranostics agents, S.Geninatti, Torino University, Torino, Italy

11:00-11:30: *coffee break*

11:30-12:30: biological models in NECTAR, C.Balducci, Mario Negri Institute for Pharmacological Research, Milano, Italy

12:30-13:00: tutorship

13:00-14:00 *lunch*

14:00-15:30: **hands-on** using pre-recorded data sets of n-spectrometry, S.Pasquato, Raylab solutions, Italy + hands-on using pre-recorded data sets of n-spectrum unfolding, N.Protti, Pavia University, Pavia, Italy

15:30-16:00: *coffee break*

16:00-17:30: **hands-on** using pre-recorded data sets on micro- and nanodosimetry, D.Bortot & D.Mazzucconi, Milano Politecnico, Milano, Italy

17:30-18:30: tutorship

Thursday 21.09.2023:

9:00-10:00: biological features of amyloidosis and protein aggregates in AD, M.Gobbi, Mario Negri Institute for Pharmacological Research, Milano, Italy

10:00-11:00: low doses and low dose rates effects, with particular focus on brain tissues, L.Lundholm, Stockholm University, Stockholm, Sweden and A.Ross, Essen University Hospital, Essen, Germany

11:00-11:30 coffee break

11:30-12:30: ionizing radiation induced immune effects in the brain, L.Lundholm, Stockholm University, Stockholm, Sweden and A.Ross, Essen University Hospital, Essen, Germany

12:30-13:30: lunch

13:30-15:00: **hands-on** using pre-recorded small animal MRI, E.Micotti and F.Moro, Mario Negri Institute for Pharmacological Research, Milano, Italy

15:00-15:30: coffee break

15:30-17:00: **hands-on** using pre-recorded microscopy images, S.Fumagalli, Mario Negri Institute for Pharmacological Research, Milano, Italy

17:00-18:00: tutorship

Evening: social dinner

Friday 22.09.2023:

9:00-9:30: tutorship

9:30-10:15: Radiotherapy and BNCT of the brain, A.Wittig, Würzburg University, Würzburg, Germany

10:15-11:00: clinical translation of NECTAR project, R.Dodel, Essen University Hospital, Essen, Germany

11:00-11:30: coffee break

11:30-13:00: final test, presentations/comments on data analysis

13:00-14:00: lunch

14:00-16:00: visit to experimental/clinical facilities in Pavia (i)

16:00-18:00: visit to experimental/clinical facilities in Pavia (ii)

No laboratories or practical activities are foreseen. On the contrary, 9 hours of hands-on exercises and data analysis based on data sets previously prepared and tested by the teaching staff will be proposed to the students. To perform the hands-on sessions, the only request is that each student must have his/her personal laptop. Specific software or tools required for the data analysis will be announced beforehand and instructions for installations, etc... will be shared to all the accepted students few weeks before the starting of the school and exploiting the web page of the school.

Tutorship indicates sessions where students will be further assisted by the faculty members in the data analysis or hands-on exercises used during lessons or in preparing the report for the final test.