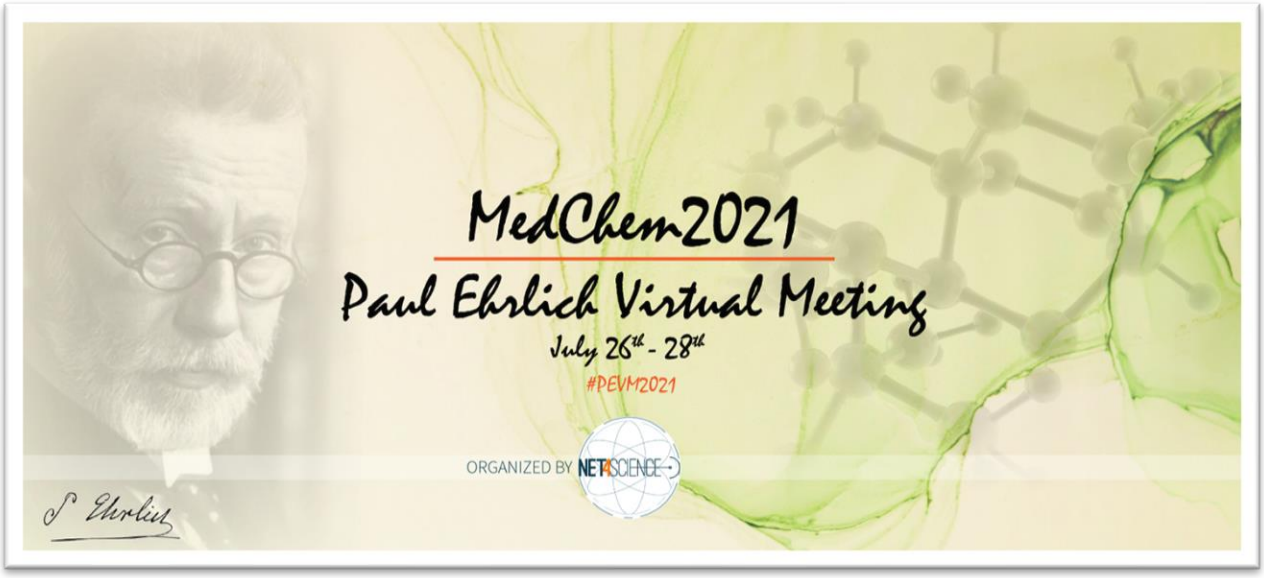
BOOK OF ABSTRACTS

Paul Ehrlich Euro-PhD Network Virtual Meeting 2021



Zoom platform, July 26th-28th 2021

www.pehrlichmedchem.eu

www.net4science.com

medchem2021.unicz.it

WELCOME PREFACE

It is a great pleasure for the Scientific and Organizing Committees to welcome all participants to this extraordinary meeting of the Paul Ehrlich Euro-PhD network. This edition, established formally during the local coordinators' meeting on February 15th 2021, has been designed with the ultimate aim to keep as much as possible united the network that physically had the occasion to meet last time only in June 2019 in Catanzaro. In that occasion, nobody could imagine what should happen after few months. The X edition of the Paul Ehrlich Euro-PhD meeting, scheduled in Barcelona, has been fixed and postponed twice in 2020 and 2021 due to pandemic reasons. So, the risk of losing the texture of the network, the contacts among all adhering Universities and the opportunity to award brilliant PhDs with all PE requirements was really high and concrete. In order to reduce such a risk, the Paul Ehrlich Euro-PhD community promptly reacted the situation and to propose a virtual formula for this extraordinary edition. It is obviously not the best choice, but the only real alternative was to skip meeting also in 2021. In order to attract as much as possible a wide audience of participants, our committees invested a lot in a new meeting formula, where no keynote lectures are scheduled and only afternoon sessions are organized in three consecutive days. The idea is to promote as much as possible the interaction among the participants, involving them in ten selected projects, distributed in three unedited PENP sessions, where local coordinators are actively invited to keep high the discussion level. The traditional Paul Ehrlich Euro-PhD Awards, named as PEEPA, are organized in two sessions and, for the first time, one of the 10 eligible PhDs will be selected for an in presence young investigator meeting organized in February 2021 in Nantes (France). Furthermore, flash communications from PENP and Poster contribution will enrich the program of the three days with young speakers. Moreover, two special sessions, respectively related to the Editor's corner and the PE Alumni association, will complete the programme. Finally, following the tradition of previous editions, the awarding ceremony will close the last day and, for the first time, a special issue on a renowned scientific journal will be officially launched.

As coordinator of the Paul Ehrlich Euro-PhD network, this meeting represents my last activity for this community within the exciting three year

period 2019-2021. Unfortunately, the pandemic situation strongly effected the original planning, but basing on the consistent participation of scientific contribution reported in this book of abstract and also on additional requests collected from some Universities to join us, I am quite satisfied of this result. I want to emphasize that the organization of this meeting could not be done without the precious contribution of the Scientific Board (Julio Alvarez-Builla, Athina Geronikaki, Elias Maccioni and Serge Van Calenbergh) and the Organizing Committee, members of my research team (Antonio Lupia, Francesco Mesiti, Federica Moraca, Francesco Ortuso, Giulia Panzarella and Isabella Romeo), who really worked hard to create this special event, that I hope will be reminded as a nice virtual experience within all participants. Last but not least, I express my gratitude to two institutions, Net4Science srl and the Life Science PhD course of my University in Catanzaro, for hosting and promoting the PEVM2021 with all available media channels and three additional institutions, Schrödinger software house, Gilead Pharma company and Chemistry Europe for supporting our initiative.

So, I wish you to enjoy the PEVM2021 and to hope to meet again in presence as soon as possible!

Catanzaro, July 25th 2021

Stefano Alcaro
Università "Magna Græcia" di Catanzaro (Italy)
Coordinator of the Paul Ehrlich Euro-PhD Network
Chair of MedChem2021 Virtual Meeting
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Commitees

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Athina Geronikaki
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ORGANIZING COMMITTEE
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PEVM2021 Scientific Programme

MONDAY, July 26th 2021

Introduction to the Paul Ehrlich Euro-PhD Network Virtual Meeting 2021

14:45 Welcome greetings to #PEVM2021
Stefano ALCARO, Università "Magna Græcia" di Catanzaro (Italy) and PE MedChem Euro-PhD Network Coordinator

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PENP Session I - Topic: "Cancer diseases"
Chairs: **Beatriz de PASCUAL-TERESA**, Universidad CEU San Pablo (Spain)
Luc DEMANGE, Université de Paris V Descartes (France)
Rita GUEDES, Universidade de Lisboa (Portugal)

15:00 **PENP-1**
Pyrrolo[2',3':3,4]cyclohepta[1,2-d][1,2]oxazoles, a new class of anti-mitotic agents active against multiple malignant cell types
Marilia BARRECA
Università di Palermo (Italy)

15:20 **PENP-2**
Model optimization and site-mapping of hASNS, a novel target in the treatment of ALL
Adriana CORICELLO
Università "Magna Græcia" di Catanzaro (Italy)

15:40 **PENP-3**
Development of Tumor-Associated Carbonic Anhydrases Inhibitors Based on Benzopyrone Scaffold
Lisa SEQUEIRA
Università di Cagliari (Italy)

16:00 ***Coffee break and Sponsor Slideshow***

PEEPA Session I – Paul Ehrlich Euro-PhD Awards
Moderator: **Serge VAN CALENBERGH**, Ghent University (Belgium)

16:10 **PEEPA-1**
Molecular modeling studies on antiviral targets: Drug resistance mechanisms and rational drug design
Francesca Alessandra AMBROSIO
Università "Magna Græcia" di Catanzaro (Italy)

16:25 **PEEPA-2**
Derivatives of Pyrazinecarboxylic Acid as Potential Antimycobacterial Active Drugs
Ghada BOUZ
Charles University (Czech Republic)

16:40 **PEEPA-3**
Au and Ag NHC-metal complexes as effective multi-target agents in breast cancer tratment
Jessica CERAMELLA
Università della Calabria (Italy)

16:55 **PEEPA-4**
Development of new chemical entities based on natural scaffolds with therapeutic potential towards age-related disorders
Daniel CHAVARRIA
Universidade do Porto (Portugal)

17:10 **PEEPA-5**
Behind the allosteric inhibition of PTPRZ1, a current druggable phosphatase
Bruno DI GERONIMO
Universidad San Pablo-CEU (Spain)

Flash PENP Communications (5 min)
Moderator: Claudia Sissi, Università di Padova (Italy)

17:25 **FC-1**
Modeling Epac1 interactions with the allosteric inhibitor AM-001 by co-solvent molecular dynamics
Marianna BUFANO
Università di Roma "La Sapienza" (Italy)

17:30 **FC-2**
Delivery for infectious diseases
Valentina DEL GENIO
Università di Napoli "Federico II" (Italy)

17:35 **FC-3**
Discovering selective Poly (ADP-ribose) Polymerase (PARP) Inhibitors to expand the precision medicine approach
Mariagiulila NIZI
Università di Perugia (Italy)

17:40 **FC-4**
Inhibition of ZIKA virus replication by novel inhibitors of NS2B/NS3 complex
Michela PUXEDDU
Università di Roma "La Sapienza" (Italy)

17:45 **FC-5**
The interaction between gab2 with sh3-domain of gbr2 as a new potential target in cancer therapy
Jessica SEBASTIANI
Università di Roma "La Sapienza" (Italy)

17:50 **FC-6**
Development of innovative analytical tools to improve the safety of plant-based health products, application to the case of plants of the genus Tinospora used in Laos and in Europe
Kedmany SISOUKLATH
Université de Paris (France)

17:55 **FC-7**
Proteomic contribution to the omic path for the identification of novel drugs overcoming resistance in Leishmaniasis
Lorenzo TAGLIAZUCCHI
Università di Modena e Reggio Emilia (Italy)

18:15 **Closing**

TUESDAY, July 27th 2021

12:00 Paul Ehrlich Euro-PhD Network Coordinator Meeting (Reserved only for PE Local Coordinators)

14:45 Opening
Rita PODZUNA, Senior Director at Schrödinger – München (Germany)

PENP Session II – Topic: "Neurodegenerative diseases"
Chairs: **Fernanda BORGES**, Universidade do Porto (Portugal)
Jose Ignacio BORRELL, Ramon Llull University (Spain)
Elias MACCIONI, Università di Cagliari (Italy)

15:00 **PENP-4**
Identification of molecular basis of praja2 and TBC1D31 interaction
Bianca FIORILLO
Università di Napoli "Federico II" (Italy)

15:20 **PENP-5**
Flavonoid-derived acetylcholinesterase inhibitors as multitarget drug ligands for the treatment of Alzheimer's disease
Jorge GÓMEZ-CARPINTERO
Universidad Complutese de Madrid (Spain)

15:40 **PENP-6**
LigAdvisor: a unified and easily accessible webserver for polypharmacology and drug design repurposing
Annachiara TINIVELLA
Università di Modena e Reggio Emilia (Italy)

16:00 ***Coffee break and Sponsor Slideshow***

PEEPA Session II – Paul Ehrlich Euro-PhD Awards
Moderator: **Hanoch SENDEROWITZ**, Bar-Ilan University (Israel)

16:10 **PEEPA-6**
Strategies against chronic kidney disease: new modulators of PTP1B and ILK
Javier GARCÍA-MARÍN
Univerisdad de Alcalá (Spain)

16:25 **PEEPA-7**
Targeting carbonic anhydrases (CAs): rational design, synthesis Structural studies and biochemical evaluation
Francesca MANCUSO
Università di Messina (Italy)

16:40 **PEEPA-8**
Mapping chromone-3-phenylcarboxamide pharmacophore: quid est veritas?
Francesco MESITI
Università "Magna Græcia" di Catanzaro (Italy)

16:55 **PEEPA-9**
The search for novel histamine H3 receptor ligands in the group of piperazine derivatives
Katarzyna SZCZEPAŃSKA
Jagiellonian University Medical College (Poland)

17:10 **PEEPA-10**
Targeting protein-protein interactions for the treatment of tumors and neurodegenerative disorders
Serena VITTORIO
Università di Messina (Italy)

17:30 ***Editor's Corner: a Q&A session on best practices in publishing***
Moderator: **Rosaria GITTO**, Università di Messina (Italy)

Paola BARRAJA (EJMC)
Maria Laura BOLOGNESI (JMC)
David PERALTA (ChemMedChem)

18:00 ***Closing***

WEDNESDAY, July 28th 2021

14:45 Opening
Michelangelo SIMONELLI, Senior Government Affairs Director at Gilead Sciences (Italy)

PENP Session III – Topic: "Infectious diseases"
Chairs: Maria Paola COSTI, Università di Modena e Reggio Emilia (Italy)
Athina GERONIKAKI, Aristotle University of Thessaloniki (Greece)
Daniel KIKELJ, Univerza V Ljublijani (Slovenia)
Oriana TABARRINI, Università di Perugia (Italy)

15:00 **PENP-7**
Discovery of an Effective Dual αvβ6/αvβ8 Integrin Ligand as a Herpes Simplex Virus-1 Entry Inhibitor
Vincenzo Maria D'AMORE
Università di Napoli "Federico II" (Italy)

15:20 **PENP-8**
Amphiphilic azobenzenes: Antibacterial activities and biophysical investigation of their interaction with bacterial membrane lipids
Antoine FRANCHE
Université de Paris (France)

15:40 **PENP-9**
6-Methyl-7-aryl-7-deazapurine nucleosides as anti-trypanosoma cruzi agents: structure-activity relationship and in vivo efficacy
Cai LIN
Ghent University (Belgium)

16:00 **PENP-10**
Chimeric small molecules in the search for novel anti-trypanosomatid agents
Elisa ULIASSI
Università di Bologna (Italy)

16:30 ***Coffee break and Sponsor Slideshow***

16:45-17:15 ***Flash PE Poster Communications (3 min)***
Moderator: Agostino MARRAZZO, Università di Catania (Italy)

FC-1
Haloperidol metabolite II Valproate ester MRJF22 enantiomers as potential multifunctional agents against uveal melanoma
Carla BARBARACI
Università di Catania (Italy)

FC-2
Design, synthesis and biological evaluation of new 4-oxo-1,4-dihydroquinolin-3-adamtilamides derivates to develop CB2R fluorescent probes
Francesca INTRANUOVO
Università di Bari "Aldo Moro" (Italy)

FC-3
Novel Proteasome Inhibitors based on γ-lactams for cancer treatment
Roberta LISTRO
Università di Pavia (Italy)

FC-4
New cytisine-based multitarget compounds for neurodegenerative diseases
Emmanuel OROCIO RODRÍGUEZ
Universidad Complutense de Madrid (Spain)

FC-5
A novel scaffold for potent and selective inhibition of tumor-related carbonic anhydrase isoforms IX and XII
Virginia PONTECORVI
Università di Roma "La Sapienza" (Italy)

FC-6
Hybrid design, synthesis and in vitro biological evaluation of 1H-indazoles as MAO B inhibitors: effect of 1,2,4-oxadiazole bioisosteric replacement of the amide linker
Mariagrazia RULLO
Università di Bari "Aldo Moro" (Italy)

17:30 ***Social Event "PE Alumni meet again"***
Moderators: **Cosimo ALTOMARE**, Università di Bari "Aldo Moro" (Italy)
Federica MORACA, Università di Napoli "Federico II" (Italy)

What about a PE Alumni Association?

18:00 ***Special Issue Launch & Awards Announcement***

Best PEEPA
Best PENP
Best POSTER
Best Flash Communication

Greetings and closing remarks

Next meeting announcement

Poster Communications (PC_13)

Design of dual cyclooxygenase-2 and 5-lipoxygenase inhibitors with iron-chelating properties – molecular docking

Jelena Bošković, Dušan Ružić, Olivera Čudina, Katarina Nikolić, and Vladimir Dobričić

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Inflammation has an important function in progression of some diseases, such as cancer [1]. Dual inhibition of cyclooxygenase-2 (COX-2) and 5-lipoxygenase (5-LOX) pathways provides a rational strategy for development of more effective and safer anti-inflammatory drugs [2]. It is assumed that compounds bearing sulfohydroxamic acid chelate catalytic iron inside 5-LOX enzyme and there are only few publications about performed molecular docking studies on these compounds. The main aim of our study was to establish valid and accurate molecular docking platform for future *in silico* screening and design of promising dual COX-2 and 5-LOX inhibitors with terminal sulfohydroxamic group. GOLD (Genetic Optimisation for Ligand Docking) software v.5.7 was used in order to predict the binding modes and docking poses of previously published dual COX-2 and 5-LOX inhibitors [3] compounds in the active sites of COX-1, COX-2 and 5-LOX enzymes. Crystal structures were downloaded from the PDB website: 5WBE (for COX-1), 1CX2 (for COX-2) and 3O8Y (for 5-LOX) [4]. The first step was to investigate binding modes and docking poses of sulfohydroxamic analogues taken from literature, which expressed dual COX-2 and 5-LOX inhibitory activities and to establish correlation between experimentally obtained inhibitory activities and calculated scoring functions (ChemPLP for COX-1 and COX-2 enzymes, ASPFF for 5-LOX enzyme). Nine newly designed sulfohydroxamic analogues were docked into COX-1, COX-2 and 5-LOX enzymes. In the case of COX-2 enzyme, all designed compounds showed the same binding pattern as the co-crystalized ligand, SC-558, while no significant interactions were observed in the COX-1 enzyme. The compounds had lower ChemPLP scores when docked into COX-1 enzyme comparing to COX-2, which indicated good *in silico* predicted COX-2 selectivity. Obtained ASPFF and docking poses indicate that these compounds are potential 5-LOX chelating inhibitors. In this study, we developed valid molecular docking models to accelerate *in silico* identification and design of dual COX-2 and 5-LOX inhibitors bearing sulfohydroxamic acids.

[1] Ricciotti, E.; Fitzgerald, G. A., *Arteriosclerosis, Thrombosis, and Vascular Biology,* **2011**, *31* (5), 986–1000.
[2] P, J. J.; Manju, S. L.; Ethiraj, K. R.; Elias, G., *European Journal of Pharmaceutical Sciences* **2018**, *121*, 356–381.
[3] Kaur, J.; Bhardwaj, A.; Huang, Z.; Knaus, E. E., *ChemMedChem* **2012**, *7* (1), 144–150.
[4] www.rcsb.org