STRATAGEM
CA17104

New Diagnostic and Therapeutic Tools against Multidrug Resistant Tumours

ABSTRACT BOOK

STRATAGEM CA17104
Annual Conference
3rd MC meeting and 4th WGs meeting
Belgrade, Serbia
27th - 28th February, 2020

cost
EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

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Welcome to Belgrade

The COST Action CA17104 STRATAGEM Annual Conference – 3rd MC meeting and 4th WGs meetings will take place in Belgrade, at the 88 Rooms Hotel in Belgrade, from 27th to 28th February, 2020. In line with the Action title "New diagnostic and therapeutic tools against multidrug resistant tumours", this meeting will provide an excellent scientific program led by international experts. Invited speakers with different expertize in cancer research, therapy, chemistry, toxicology, and bioinformatics will widen our knowledge from tumor microenvironment to tumor therapy. A talk dedicated to the memory of our honorable colleague Prof. Maurizio Botta will remind us of his work and achievements. His work inspired fruitful collaborations within our COST Action. Besides, special attention will be given to the education of young scientists through the round tables "Meet the invited speakers", "MDR research towards therapy" and "MDR research towards diagnostics". Information on how to apply for the STSM and ITCCG will also be provided during our Annual Conference. ECIs will be given a chance to present their successful STSM stories and compete for the Best Poster Award.
Belgrade – a historic capital full of beauty, history of destruction and reconstruction, famous for its traditional hospitality, food and the best time in Europe – is the perfect place to go for new ideas and collaborations.
We look forward to welcoming you at the STRATAGEM Meeting!

Scientific Committee

Dr. Chiara Riganti – Action Chair (Italy)
Prof. Roberta Fruttero– Former Action Chair (Italy)
Dr. Javier De Las Rivas – Action Vice Chair (Spain)
Mr. Thomas Mohr – WG 1 Leader (Austria)
Prof. Catherine Passirani – WG 2 Leader (France)
Prof. M. Helena Vasconcelos – WG 3 Leader (Portugal)
Dr. Simona Saponara – WG 4 Leader (Italy)
Dr. José M. Padrón - Science Communications Manager (Spain)
Dr. Milica Pešić - STSM Coordinator (Serbia)
Dr. Jitka Viktorova – ITC CG Coordinator (Czech Republic)

Local Organizing Committee

Department of Neurobiology
Institute for Biological Research "Siniša Stanković" - National Institute of Republic of Serbia
University of Belgrade

Dr. Milica Pešić
Dr. Jelena Dinić
Dr. Tijana Stanković
Dr. Ana Podolski-Renić
Dr. Miodrag Dragoj
Dr. Sofija Jovanović Stojanov
Mirna Jovanović
Ana Kostić

STRATAGEM Action Summary

This Action will build the first multidisciplinary network, including academic laboratories, research institutes, small and medium enterprises (SMEs), with a wide range of excellent and non-overlapping expertise, aiming at improving at the same time the diagnosis and therapy of multidrug resistant (MDR) solid tumors. Until now, there are fragmented knowledge on biomarkers and therapeutic tools used against MDR tumors; there are not algorithms predictive/diagnostic of MDR tumors ex ante; all the past therapies against MDR tumors failed. The key challenge of this Action is to fill these gaps, by producing a comprehensive, open and user-friendly platform of knowledge on MDR tumors, identifying new diagnostic/predictive biomarkers, producing new and safe compounds applicable to personalized treatments of MDR tumors. Up to 70% of solid tumors are resistant at the diagnosis: this means poor life quality and poor prognosis for patients, high management costs for the European healthcare systems. This Action is working to improve diagnosis and treatment of patients with MDR tumors and reduce the costs for their management. Second, by creating fruitful collaborations between basic and industrial research, we will give impulse to the creation of new Start-up and SMEs in Europe. Finally, the Action aims at raising the level of European research on MDR, reducing the disparity in the research quality between EU countries and ITC, providing the necessary training for European early stage researchers (ESRs) to grow as future independent research leaders, regardless of location, age or gender.

Action website: https://stratagem-cost.eu/
Contact: costaction.17104@unito.it

COST is a unique means for European researchers, engineers and scholars to jointly develop their own ideas and new initiatives across all fields of science and technology through trans-European networking of nationally funded research activities.
Website: http://www.cost.eu/

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Programme

Wednesday, 26th February 2020	
18:00 - 19:00	Registration (Rooftop conference room)
Thursday, 27th February 2020	
08:30	Registration (Rooftop conference room)
09:30	Welcome Message
09:40 - 11:30	**Section I: Chair Thomas Mohr**
9:40	*Invited lecture* Isaac Witz: When Circulating Tumor Cells Meet the Metastatic Microenvironment
10:10	Ana Čipak Gašparović: Oxidative stress as a factor acting on breast cancer cells of different malignancies via changes in lipid profile, aquaporin expression and Nrf2
10:30	Muriel Cuendet: 2D versus 3D co-culture multiple myeloma model: the example of with anolides
10:50	Miguel Machuqueiro: The pH-dependent mechanism underlying membrane crossing of Lewis base drugs
11:10	Coffee break
11:30 - 13:30	**Section II: Chair Catherine Passirani**
11:30	*Invited lecture* Mattia Mori: Switching from 14-3-3 to Carbonic Anhydrases through hit recycling
12:10	Philippe Bertrand: Epigenetic strategies against cancers with HDAC inhibitors alone, in combination or using drug delivery system
12:30	Andreia Valente: Ruthenium−cyclopentadienyl bipyridine−biotin based compound: P-gp inhibition and activity against resistant cancer cells
12:50	Luigi Paduano: Multimodal Iron-Oxide Nanoparticles: from Design to *in vivo* Applications
13:10	Angélica Figueroa: Novel small-molecule inhibitors against epithelial to mesenchymal transition: implication in drug resistance
13:30	Lunch and Poster Session I
15:00 - 16:30	**Parallel Sessions**
	1. Core Group Meeting (Jaspis boardroom) 2. Round Tables: Meet the Invited Speakers; Participate in the STSM; MDR research towards therapy; MDR research towards diagnosis (Rooftop conference room)
16:30	Coffee break
17:00 - 18:30	**Parallel Sessions**
	1. MC Meeting (Oniks conference room) 2. Round Tables: Meet the Invited Speakers; Participate in the STSM; Apply for the ITC grant; MDR research towards therapy; MDR research towards diagnosis
20:30	Social Event - Folklore Concert and Group Photo
Friday, 28th February 2020	
09:00	Registration (Rooftop conference room)
09:30 - 11:20	**Section III: Chair Ilza Pajeva**
09:30	*Invited lecture* Goran Mitulovic: Relevance of Proteomics Regarding Clinical Research and Clinical Application
10:00	Alfonso Taotlani Garcia Sosa: Dox and S-Dox *in silico* interaction with xenobiotic proteins Pregnane-X-receptor and Sulfotransferase
10:20	Yordan Yordanov: *In silico* and *in vitro* toxicological studies on H2S-releasing doxorubicin
10:40	José Juan García Marín: Role of transportome in liver and gastrointestinal cancer chemoresistance

New pyrazolo[3,4-d]pyrimidine derivatives reverse multidrug resistance in cancer cells by inhibiting P-glycoprotein activity

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Multidrug resistance (MDR) represents the leading cause of cancer treatment failure. One of the main causes of MDR is overexpression of P-glycoprotein (P-gp). As a member of the ATP-binding cassette (ABC) transporter family, P-gp is responsible for reduced intracellular accumulation of both targeted therapies and classic chemotherapeutics. Tyrosine kinase inhibitors (TKIs) have been reported to interact with ABC transporters either as their substrates or inhibitors depending on the concentration range applied. We have investigated the anticancer potential of novel TKIs pyrazolo[3,4-d]pyrimidines and their prodrugs against two pairs of sensitive and MDR cancer cell lines with P-gp overexpression: non-small cell lung carcinoma (NCI-H460 and NCI-H460/R) and colorectal carcinoma (DLD1 and DLD1-TxR). The tested compounds displayed significant cell growth inhibition that was not compromised by the MDR phenotype. Treatment with the compounds inhibited P-gp activity in concentration- and time-dependent manneras revealed by the increase in accumulation of the P-gp substrate rhodamine 123. TKIs directly interacted with P-gp and inhibited its ATPase activity. The investigated pyrazolo[3,4-d]pyrimidines enhanced the efficacy of doxorubicin and paclitaxel in MDR cancer cells. The potential for reversing P-gp-mediated MDR makes investigated TKIs prospective candidates for further development regarding the treatment of resistant cancers.