DIPARTIMENTO DI FARMACIA E BIOTECNOLOGIE

AVVISO DI SEMINARIO

Il giorno giovedì **9 Novembre 2023**
alle ore **10.00**

in presenza:

Aula Magna Igiene –piano terra, via San Giacomo 12, Bologna BO

oppure *in streaming:*

https://teams.microsoft.com/l/meetup-join/19%3aN09c0NIyEssBnF7ObCyDOQwkgDWm1qdd9f7F2nJV9fw1%40thread.tacv2/1631519544944?context=%7b%22Tid%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22Oid%22%3a%225a941351-ef41-4aa4-8771-fa50a6d62ca1%22%7d

Prof. Djuro Josic, PhD

Laboratory of Clinical Chemistry, University of Pula, Croatia and the Warren Alpert Medical School of Brown University and Rhode Island Hospital, Providence, RI, USA

(ospite Prof.ssa Manuela Bartolini)

terrà un seminario dal titolo:

EXOSOMES, A CHALLENGING TARGET FOR QUANTITATIVE PROTEOMICS

Colleghi e studenti sono cordialmente invitati

Commissione Ricerca e Attività Correlate - FaBiT

ABSTRACT

Microvesicles released by many cell types are a heterogeneous population of large (100-1000nm) and small vesicles called exosomes (30-100nM). Interest in microvesicles has blossomed since reports of their ability to reprogram cellular phenotypes via the horizontal transfer of mRNA, proteins or microRNAs. In our early experiments, we demonstrated that the MVs from other tissues can induce tissue specific genes. In order to check it, the experiments with liver tissue from mice as MV donor and rat BMC as target cells were performed. When analyzed by RT-PCR, transcripts for both rat and mouse albumin were detected suggesting MV mediated transfer of functional albumin mRNA as well as transcriptional activators for the rat albumin gene [2}. Additionally, we are searching for alternative methods to generate MV from intact liver. To obtain a closer approximation to normal liver, MV were collected from medium conditioned by recirculation through an isolated perfused liver. TEM examination revealed an unexpectedly clean preparation of MV ranging from 40nm to 800nm in diameter. When MVs were collected by perfusion of an isolated liver after injury, from a rat treated with 500mg/Kg acetaminophen, striking differences were observed in the size distribution of MV. To determine if there were also differences in composition, 15 ug of MV collected from normal and acetaminophen (APAP) treated rat livers were solubilized, digested with trypsin and analyzed by LC-ESI-MS/MS. In addition to standard methods for sample preparations and tryptic digestion, a so-called “in gel digestion method” for tryptic hydrolyisis of microvesicle samples was applied [2]. By use of this approach, additional very hydrophobic proteins were identified, especially in MV samples that were shed by injures liver. These results revealed marked differences in MV proteomes. Of the 200 proteins identified between the two samples, 67 and 100 were unique to normal and acetaminophen treated livers, respectively and 53 were held in common. While MV from normal liver had a preponderance of phase 1 (CYP450s) and phase II detoxification enzymes, those from acetaminophen treated livers were enriched for annexins, signaling proteins, and membrane receptors, transporters and enzymes. These results suggest the possibility of defining different types of liver injury by the proteomic signature of MV collected by perfusion or shed into the serum. Further analysis of these results demonstrated that this significant change of proteome of MV after liver treatment even with sub-toxic concentration of APAP indicates dramatic perturbation in the function of this vital organ.

1. Aliotta et al. Exp. Hematol. 38 (2010) 233-245.
2. Lee, Šrajer Gajdošik, Josić et al. Mol. Cell. Proteomics 14 (2015) 471-483.
3. Kovač Peić, Šrajer Gajdošik, Josić et al. Electrophoresis,**2021**, *42*, 1388–1398.
4. Josić et al. Int. J. Mol. Sci. *2022,* 23(16), 8870; https://doi.org/10.3390/ijms23168870