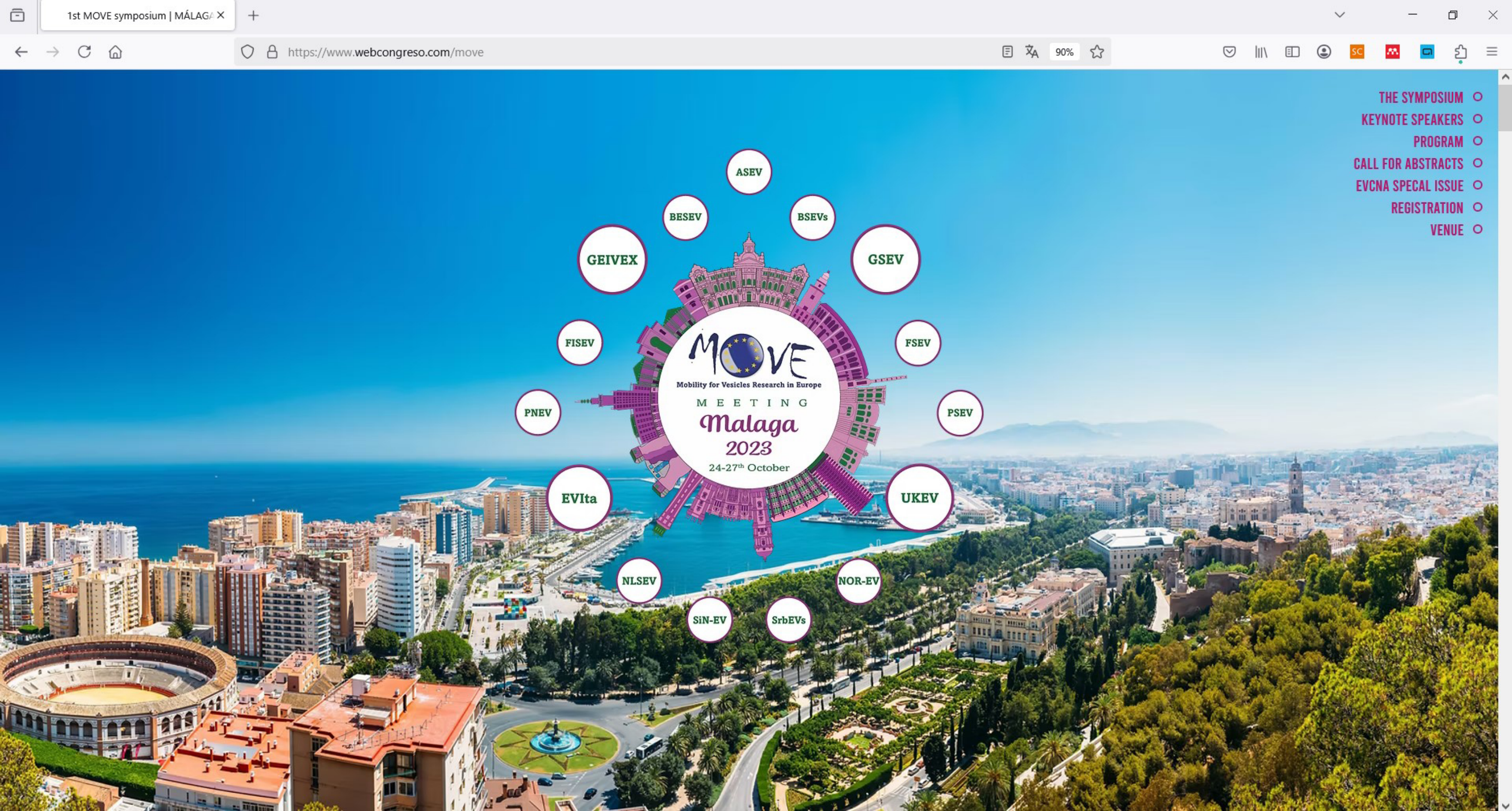




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THE SYMPOSIUM

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KEYNOTE SPEAKERS

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PROGRAM

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Tuesday, October 24th

Time	Talk / Poster title	Speaker
8:00	Registration	
9:00	Welcome <i>Prof M^a Isabel Lucena, Department of Pharmacology, School of Medicine, chair of the LOC; Prof. Juan Jose Hinojosa Torralvo, Dean of the Law Faculty, and Prof. Zaida Díaz Cabiale, Research and Innovation Vice Chancellor from UMA</i>	
9:30	Opening Lecture <i>Chair: Juan Manuel Falcón Pérez [CIC bioGUNE-RTA, CIBERehd, Derio (GEIVEX)]</i> “EVs and Parasitic Diseases: let’s MOVE-on”	Hernando del Portillo
10:15	Session I: Parasitic EVs <i>Chairs: Juan Manuel Falcón Pérez and Susana Santos [i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto (PNEV)]</i>	
	O1. "Functional characterization of a hypothetical spleen-dependent <i>P. vivax</i> gene and the role of EVs in spleen-parasite interactions"	Albert Ayllón
	O2. "Proteomic profiling of plasma-derived extracellular vesicles in patients with visceral leishmaniasis: a biomarker discovery. "	Ana Torres
	O3. "Are Extracellular Vesicles from trematodes sufficient to cause fibrosis in liver? Evaluation of the effects of EVs in vitro and in vivo."	Christian Miquel Sánchez-López
	O4. "Multiparametric study to optimize EV production for immunomodulatory potential"	Christophe Wong
11:10	Coffee break	
11:45	Session II: Infection and interspecies communication <i>Chairs: Esther Nolte-'t Hoen [Utrecht University (NLSEV)] and Nele De Langhe [Ghent University (BESEV)]</i>	
	O5. "Intercellular communication strategies of human polyomaviruses: The role of extracellular vesicles in Merkel cell polyomavirus pathogenesis."	Ute Andrea Westerkamp
	O6. "Impact of <i>Klebsiella pneumoniae</i> outer membrane vesicles on antibiotic resistance"	Marie Burt
	O7. "SARS-CoV-2 infection during pregnancy alters profile of placenta-derived extracellular vesicles indicating placental dysregulation"	Isabel Graf
	O8. "RNA profiles of plasma extracellular vesicles in patients with sepsis"	Berit Brusletto
	O9. "Colorectal cancer EVs alter the gut microbiome"	Rawan Maani



P2.65 "Exploring the role of Rab3 in exosome release from prostate cancer cells"	Silvana Romero et al.
P2.66 "THE USE OF EV MEMBRANE PROTEINS AS TARGETS FOR CAPTURING URINARY EVs IN NOVEL THERMAL LATERAL FLOW IMMUNOSENSORS"	Beatriz Martín Gracia et al.
P2.67 "Isolation and Analysis of Extracellular Vesicles for the Evaluation of Microsatellite Instability in Endometrial Cancer"	Carlos Honrado et al.
P2.68 "Enhancing Brain Organoid Growth through Electrical Stimulation-Induced Amplification of Extracellular Vesicles"	Sahba Mobini et al.
P2.69 "The proteome of extracellular vesicles in DLBCL plasma patients is associated to the immune response and signaling transduction"	Ana Sofia Carvalho et al.
P2.70 "Lipidomic analysis of hypoxic small extracellular vesicles from head and neck squamous cell carcinoma cells revealed upregulation of glycerophospholipids"	Alicja Głuszko et al.
P2.71 "Immortalized and primary adipose tissue- derived mesenchymal stem/stromal cells as a source of extracellular vesicles for tissue repair – comparative study"	Patrycja Dudek et al.
P2.72 "Actin rearrangement reduces CD20 and ICAM1 antigens on tumor-derived EVs and improves lymphoma immunotherapy."	Beata Pyrzynska et al.
P2.73 "Inactivation of EWSR1-FLI1 oncogene characteristic of Ewing sarcoma using Therapeutic Extracellular Vesicles (TEVs)."	Raquel Melero Fernandez de Mera et al.
P2.74 "Effects of Trophoblast Extracellular Vesicles on D-Galactose Induced Premature Aging of Keratinocytes"	Mirjana Nacka-Aleksić et al.
P2.75 "Characterisation of extracellular vesicles from mesenchymal stem/stromal cells as new delivery system for functionalized gold nanoparticles"	Maja Kosanović et al.
P2.76 "Developing an Extracellular Vesicle RNA Test for Early Detection of Patients at Risk of Aggressive Prostate Cancer"	Jason Webber et al.
P2.77 "Using extracellular vesicle glycoproteins for early detection of aggressive prostate cancer"	Demi Pritchard et al.
P2.78 "Novel EV quantification methods and their use in ageing biomarker discovery"	Benjamin Raven et al.
P2.79 "Transcriptomic analysis of astrocyte origin enriched plasma EVs in Alzheimer's Disease"	Fatma Busra Isik et al.
P2.80 "Developing a device for the isolation of ovarian cancer exosomes using nanoporous filtration "	Sadeka Nujhat et al.
P2.81 "Identification of Pro-resolutive ω 3 Oxylipins in Human Milk Extracellular Vesicles for Potential Therapeutical Application in Inflammatory Bowel Diseases "	Marta Gómez Ferrer et al.
P2.82 "The interplay between metalloprotease cleavage and extracellular vesicle secretion of immune ligands affects tumour recognition"	Silvia López Borrego et al.

Characterisation of extracellular vesicles from mesenchymal stem/stromal cells as new delivery system for functionalized gold nanoparticles

Maja Kosanović, Institute for the Application of Nuclear Energy, INEP , maja@inep.ac.rs

Marina Bekić, Institute for the Application of Nuclear Energy, INEP , marina.bekic@inep.ac.rs

Sofija Glamočlija , Institute for the Application of Nuclear Energy, INEP , sofija.glamoclija@inep.ac.rs

Sergej Tomić, Institute for the Application of Nuclear Energy, INEP , sergej.tomic@inep.ac.rs

Contact: maja@inep.ac.rs

Functionalized-gold nanoparticles (fGNPs) gained a lot of interest as perspective theranostics agents due to their stability, high loading capacity, oxidation resistance, surface plasmon resonance in NIR-spectra and scaled-up production. However, their pathology-targeting remain challenging, leading to off-target accumulation, lower therapeutic efficacy and potential systemic toxicity. The use of extracellular vesicles (EVs) could overcome these limitations by sequestration of fGNPs from undesired interactions and improving targeting capabilities. The aim of this study is to characterize EVs from human mesenchymal stem/stromal cells (MSCs) loaded with neutravidin-coated GNPs, as a first step in the development of a novel theranostics system. MSCs were treated with fGNPs for 24h before rinsing and cultivation in EVs-free medium for 24h. Interleukin (IL)-6 and IL-8 levels were measured in media by ELISA before EVs separation by differential centrifugation. EVs count and size were determined by NTA. EVs markers were assessed by Western blot. Identification of EVs loaded with fGNPs was assessed by transmission electron microscopy (TEM).

MSCs internalized fGNPs and the secretion of IL-6 and IL-8 was altered compared to the untreated MSCs. The concentrations of EVs from control and fGNPs-treated MSCs had average concentration of $7.5 \times 10^{10} \pm 2.1 \times 10^9$ p/mL and $5.5 \times 10^{10} \pm 5.9 \times 10^9$ p/mL and the average sizes were 163.4 ± 1.4 nm and 166.1 ± 06 nm, respectively. Both preparations were positive for CD63 and CD81 markers, with similar Western blot bands. TEM analysis suggested that MSCs are indeed able to release fGNPs within EVs, but also free fGNPs and the ratio between fGNPs-loaded EVs and unloaded-EVs was relatively low.

In conclusion, MSCs are potential producers of fGNPs-loaded EVs. Therefore, in the next step, loading of EVs with GNPs will be further optimized and their functional properties will be assessed to fully exploit a combination of beneficial properties of specific therapeutics, GNPs and MSC EVs for designing novel theranostics tools.