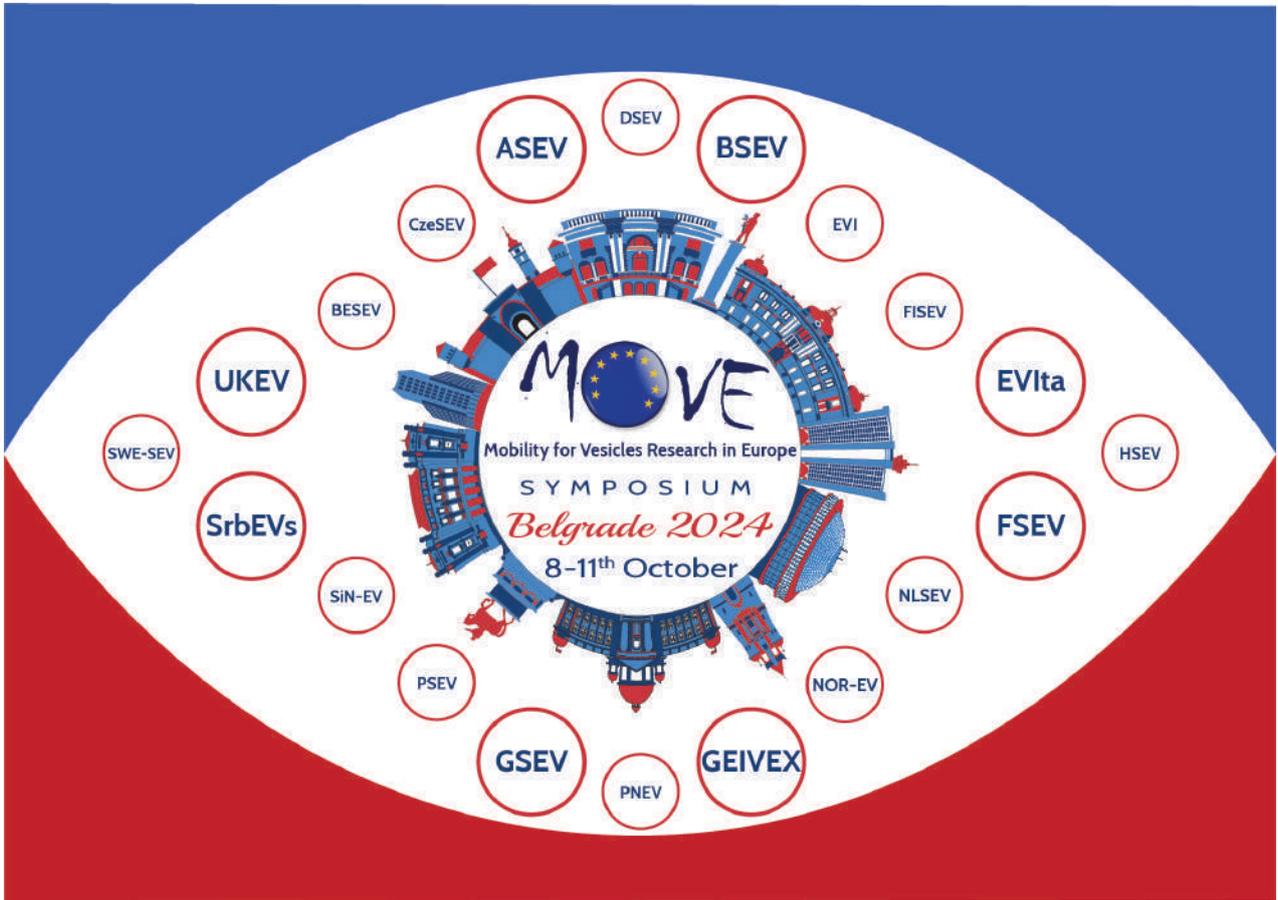


# 2<sup>nd</sup> MOVE Symposium



*presented by*

European National Societies for Extracellular vesicles



# Abstract book



# 2<sup>nd</sup> MOVE Symposium

8-11 October 2024, Belgrade, Serbia

## Organizing Societies

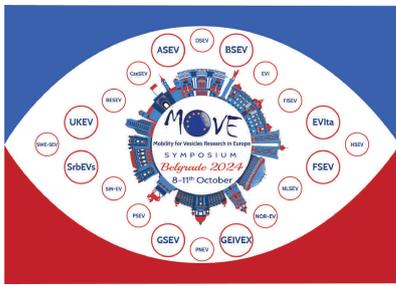


Serbian Society for Extracellular Vesicles, SrbEVs  
Austrian Society for Extracellular Vesicles, ASEV  
Baltic Society for Extracellular Vesicles, BSEV  
Italian Society for Extracellular Vesicles, EVI  
French Society for Extracellular Vesicles, FSEV  
Spanish Society for Extracellular Vesicles, GEIVEX  
German Society for Extracellular Vesicles, GSEV  
United Kingdom Society for Extracellular Vesicles, UKEV

## Supported by Societies



Belgian Society for Extracellular Vesicles, BESEV  
Czech Society for Extracellular Vesicles, CzeSEV  
Danish Society for Extracellular Vesicles, DSEV  
Extracellular Vesicles Network of Ireland, EVI  
Finnish Society for Extracellular Vesicles, FISEV  
Hungarian Section for Extracellular Vesicles, HSEV  
Israeli Society for Extracellular Vesicles, ISREV  
Netherlands Society for Extracellular Vesicles, NLSEV  
Norwegian Society for Extracellular Vesicles, Nor-EV  
Portuguese Network on Extracellular Vesicles, PNEV  
Polish Society for Extracellular Vesicles, PSEV  
Slovenian Network for Extracellular Vesicles, SiN-EV  
Swedish EV Network, Sw-SEV



# *2<sup>nd</sup> MOVE Symposium*

8-11 October 2024, Belgrade, Serbia

## International Organizing Committee

---

**Maja Kosanovic, SrbEVs**

**Beate Riner, ASEV**

**Alireza Fazeli, BSEVs**

**Annalisa Radeghieri, EVIta**

**Christian Neri, FSEV**

**Pilar Martin-Duque, GEIVEX**

**Bernd Giebel, GSEV**

**Charlotte Lawson, UKEV**



# 2<sup>nd</sup> MOVE Symposium

8-11 October 2024, Belgrade, Serbia

## Scientific Committee

---

### **Antonio Marcilla**

Dep. for Pharmacy and Pharmaceutical Technology and Parasitology, Faculty of Pharmacy,  
University of Valencia, Valencia, Spain

### **Alicia Llorente**

Oslo University Hospital, Oslo, Norway

### **Bernd Giebel**

Institute for Transfusion Medicine, University Hospital Essen, Essen, Germany

### **Berta Puig**

University Medical Center Hamburg-Eppendorf, Hamburg, Germany

### **Bojana Milutinović**

Department of Neurosurgery MD Anderson Cancer Center, Houston, USA

### **Dhanu Gupta**

Department of Paediatrics, University of Oxford, United Kingdom

### **Frederik Verweij**

Div. of Cell Biology, Neurobiology & Biophysics, Department of Biology Faculty of Science,  
Utrecht University, Utrecht, The Netherlands

### **Gema Chiva-Blanch**

Health Sciences Studies, Universitat Oberta de Catalunya (UOC) Barcelona, Spain

### **Getnet Midekessa**

Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences and  
Institute of Biomedicine and Translational Medicine, University of Tartu, Estonia

### **Jason Webber**

Institute of Life Science, Swansea University Medical School, Swansea University, Swansea, UK and  
Tissue Microenvironment Group, School of Medicine, Cardiff University, Cardiff, UK

### **Jessica Gobbo**

Centre Georges-François Leclerc, Dijon, France

### **Lydia Alvarez-Erviti**

Molecular Neurodegeneration Group, Center for Biomedical Research of La Rioja (CIBIR), La Rioja, Spain

### **Michele Guescini**

Biochemistry Department of Biomolecular Sciences, University of Urbino Carlo Bo, Urbino, Italy

### **Michiel Pegtel**

Amsterdam UMC/Cancer Center Amsterdam, Amsterdam, The Netherlands

### **Milica Popović**

Department of Biochemistry, Faculty of Chemistry, University of Belgrade, Belgrade, Serbia

### **Rossella Crescitelli**

Sahlgrenska Center for Cancer Research, University of Gothenburg, Göteborg, Sweden

### **Tanja Jasmin Kutzner**

Institute for Transfusion Medicine, University Hospital Essen, University of Duisburg-Essen, Essen, Germany

### **Tobias Tertel**

Institute for Transfusion Medicine, University Hospital Essen, University of Duisburg-Essen, Essen, Germany

### **Wolf Holthöner**

Ludwig-Boltzmann-Institute for Traumatology, Vienna, Austria



# 2<sup>nd</sup> MOVE Symposium

8-11 October 2024, Belgrade, Serbia

## Local Organizing Committee

---

Milica Popović, Faculty of Chemistry, University of Belgrade  
Maja Kosanović, Institute INEP, University of Belgrade  
Zorana Dobrijević, Institute INEP, University of Belgrade  
Ivan Jovanović, Institute Vinča, University of Belgrade  
Milica Jovanović, Institute INEP, University of Belgrade  
Lidija Filipović, Faculty of Chemistry, University of Belgrade  
Mirjana Nacka-Aleksić, Institute INEP, University of Belgrade  
Jelena Samardžić, Institute IMGGE, University of Belgrade  
Vesna Spasovski, Institute IMGGE, University of Belgrade  
Marija Tursunović, Faculty of Chemistry, University of Belgrade  
Jovana Terzić, Faculty of Chemistry, University of Belgrade

## Technical Committee

---

Aleksa Despotović

Ana Mandić

Anastazia Dimitrić

Bojana Karadžić

Dina Tumšić

Elena Vukašinović

Galja Varga

Gligorije Gligorić

Helena Majstorović

Ilija Sparavalo

Isidora Nešić

Jovana Stevanović

Katarina Kotlaja

Katarina Prodić

Ljiljana Sabljic

Marija Đurić

Marija Milivojević

Marko Prokić

Marko Stojanović

Milan Stefanović

Milana Kaličanin

Miodrag Vuković

Nađa Pavlović

Nataša Listeš

Nikolina Skrbin

Radoš Knežević

Sara Milivojević

Sofija Glamočija

Teodora Pljakić

Una Rankov

Valentina Ćurić

Vanja Krešić

Vesna Janković



## Isolation of extracellular vesicles from resistant tumor cells using nanobodies-based immunoaffinity approach

Lidija Filipović<sup>1</sup>, Marija Tursunović<sup>1</sup>, Maja Kosanović<sup>2</sup>, Marija Grozdanić<sup>3</sup>, Ana Podolski-Renić<sup>3</sup>, Milica Pešić<sup>3</sup>, Milica Popović<sup>4</sup>

<sup>1</sup>Innovative Centre of the Faculty of Chemistry, Belgrade, Serbia; <sup>2</sup>Institute for the Application of Nuclear Energy, INEP, University of Belgrade, Belgrade, Serbia; <sup>3</sup>Institute for Biological Research "Siniša Stanković" National Institute of the Republic of Serbia, University of Belgrade; <sup>4</sup>University of Belgrade-Faculty of Chemistry, Belgrade, Serbia

**Introduction:** Extracellular vesicles (EVs) are an important contributing factor to drug resistance in cancer. In order to study their features and elucidate their molecular composition. To that extent, we have decided to use two pairs of multi-drug resistant (MDR) cancer cell lines (non-small cell lung carcinoma NCI-H460/R and glioblastoma U87-TxR) and their sensitive counterparts (H460 and U87, respectively) and their contribution in drug resistance. EVs need to be isolated in an efficient manner and sufficient quantities. Broadening new possibilities in EV-based diagnostics requires innovative, adaptable, and affordable methods for the scalable isolation of high-purity EVs from different sources. This study aims to adapt high-performance immune capture chromatography based on nanobody technology for EVs isolation from cell culture media of MDR cancer cells and their sensitive cells.

**Methods:** The nanobodies utilized in this study were selected from a heavy-chain only-VHH library by direct panning against EVs and generated in *E. coli* with eGFP and a 6xHis tag. To isolate EVs, purified VHHs-GFP were immobilized on polymethacrylate polymer to create immunoaffinity capture. Isolated vesicles have been characterized by a set of biochemical and instrumental techniques (colorimetric sulfophosphovanilin-SPV assay, BCA assay, Flow cytometry, and Nanoparticle tracking analysis).

**Results:** The combined analysis of proteins, lipids, and flow cytometry analysis of three tested biomarkers (CD9, CD63, and CD81) showed that we successfully isolated EVs from both pairs of cancer cell lines. The detergent control (TRITON X-100) for biomarkers analysis showed reduced signal, thus confirming the presence of lipid-origin structures. The NTA analysis showed that MDR cancer cells produced EVs with a bigger diameter.

**Conclusion:** This study demonstrates the application of spherical porous methacrylate-based polymer coupled with VHHs for the purification of EVs from MDR cancer multi-drug-resistant cells. This inexpensive, relatively fast, and easy-to-perform method has great potential for the isolation of different classes of EVs from various biological sources.

**Funding information:** This research was supported by the Science Fund of the Republic of Serbia, Grant PRISMA No. 4747, Project title: Advancing REversible immunocapture toward SCALable EV purification—RESCALE-EV.

**Publishers:**

Serbian Society for Extracellular Vesicles, SrbEVs with  
Austrian Society for Extracellular Vesicles, ASEV  
Baltic Society for Extracellular Vesicles, BSEV  
Italian Society for Extracellular Vesicles, EVIta  
French Society for Extracellular Vesicles, FSEV  
Spanish Society for Extracellular Vesicles, GEIVEX  
German Society for Extracellular Vesicles, GSEV  
United Kingdom Society for Extracellular Vesicles, UKEV

**Editors:**

Maja Kosanovic, SrbEVs  
Beate Riner, ASEV  
Alireza Fazeli, BSEVs  
Annalisa Radeghieri, EVIta  
Christian Neri, FSEV  
Pilar Martin-Duque, GEIVEX  
Bernd Giebel, GSEV  
Charlotte Lawson, UKEV

**Technical Editor and Design:**

Maja Kosanović

**ISBN** 978-86-905626-1-9

**Year:** 2024.

**Disclaimer:** The authors are responsible for the contents of their abstracts and warrant that their abstract is original.

