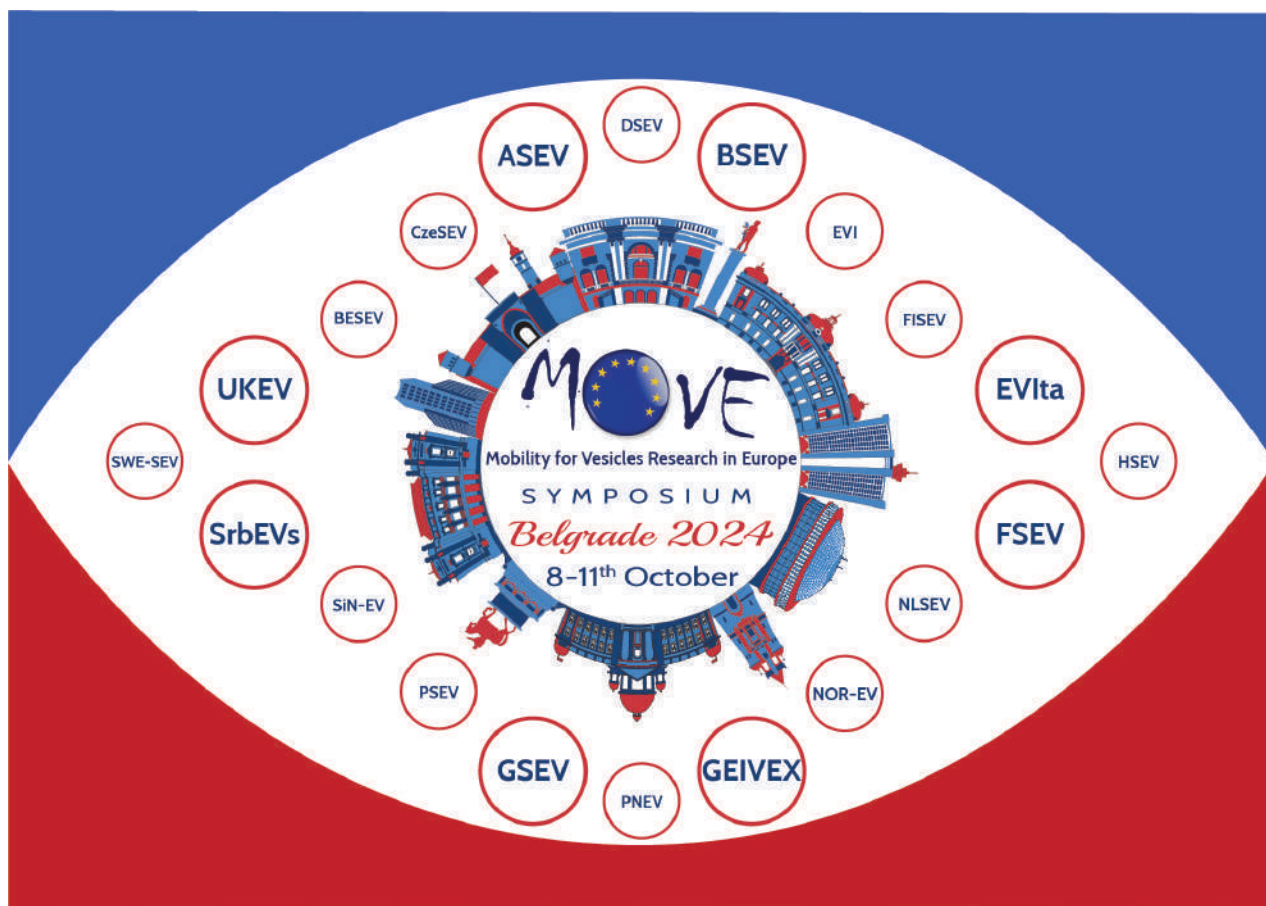


2nd MOVE Symposium

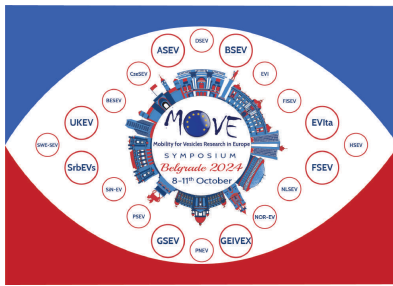


presented by

European National Societies for Extracellular vesicles



Abstract book



2nd MOVE Symposium

8-11 October 2024, Belgrade, Serbia

Organizing Societies

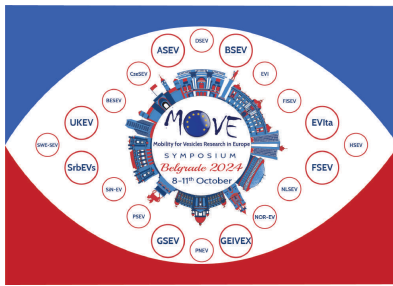


Serbian Society for Extracellular Vesicles, SrbeEVs
 Austrian Society for Extracellular Vesicles, ASEV
 Baltic Society for Extracellular Vesicles, BSEV
 Italian Society for Extracellular Vesicles, EVI
 French Society for Extracellular Vesicles, FSEV
 Spanish Society for Extracellular Vesicles, GEIVEX
 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



2nd 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



2nd 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 Holnthoner

Ludwig-Boltzmann-Institute for Traumatology, Vienna, Austria



2nd 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

Gligoriye 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 Kalićanin

Miodrag Vuković

Nađa Pavlović

Nataša Listeš

Nikolina Skrbini

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 Filipović¹, Marija Tursunović¹, Maja Kosanović², Marija Grozdanić³, Ana Podolski-Renić³, Milica Pešić³, Milica Popović⁴

¹Innovative Centre of the Faculty of Chemistry, Belgrade, Serbia; ²Institute for the Application of Nuclear Energy, INEP, University of Belgrade, Belgrade, Serbia; ³Institute for Biological Research "Siniša Stanković" National Institute of the Republic of Serbia, University of Belgrade; ⁴University 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) in order to study 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.

