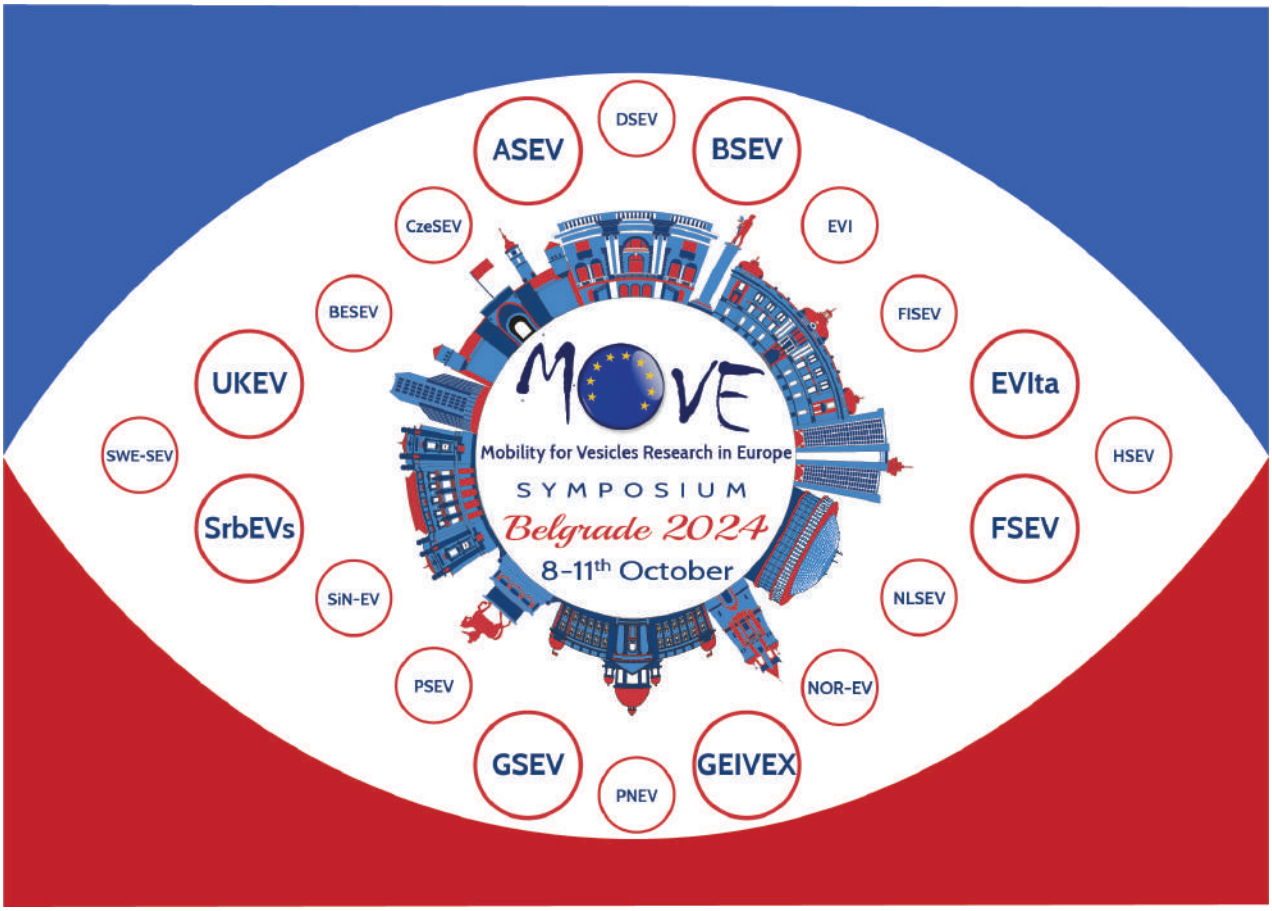
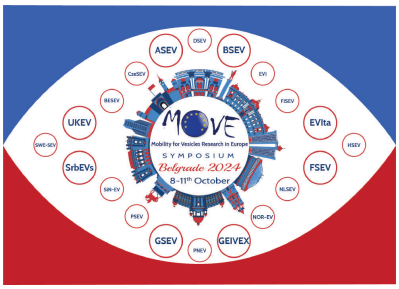
2nd MOVE Symposium



presented by

European National Societies for Extracellular vesicles

Abstract book



2nd MOVE Symposium

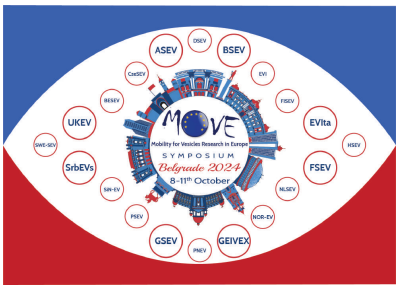
8-11 October 2024, Belgrade, Serbia

Organizing Societies

Serbian Society for Extracellular Vesicles, SrbEVs
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

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, Unigted 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

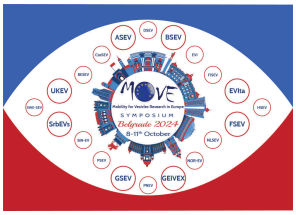
Milica Popović
Department of Biochemistry, Faculty of Chemistry, University of Belgrade, Belgrade, Serbia

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



P-N-9

Implementation of Single-domain antibodies-based approach for isolation of extracellular vesicles from human plasma

Marija Tursunović[1], Lidija Filipović[1], Ario de Marco[2] , Maja Kosanović[3], Milica Popović[4]

[1]Innovative centre of the Faculty of Chemistry, Belgrade, Serbia; [2]Laboratory for Environmental and Life Sciences, University of Nova Gorica, Nova; Gorica, Slovenia; [3]Institute for the Application of Nuclear Energy, INEP, University of Belgrade, Belgrade, Serbia; [4]University of Belgrade-Faculty of Chemistry, Belgrade, Serbia

Introduction: Extracellular vesicles (EVs) have important roles in physiological and pathological conditions, thus could be used as promising biomarkers in clinical practice. There is a need for appropriate methods for EVs isolation that bypass major challenges of current methods such as obtaining low-yield and impurity of obtained vesicles. Therefore, it is crucial to establish methods for isolating that are economical, easy-to-operate and reproducible. The aim of this work was to utilize nanobodies, obtained from a naïve library by direct panning on EVs from human cell lines, for immunocapturing of exosomes from healthy-donor plasma.

Methods: Nanobodies (NA8, $ND10_1$, $ND10_2$) were fused with green fluorescent protein and 6XHis tag, then produced in *E. Coli* cells and purified using metal-affinity chromatography. By immobilizing each nanobody to methacrylate polymer, exosomes from human plasma were isolated and their biochemical traits were determined with various methods: SDS PAGE, Bradford assay, sulfophosphovanilin assay, flow cytometry and nanoparticle tracking analysis - NTA.

Results: Nanobodies are produced in soluble form and resulted in high yield (14-32 miligrams per litre of bacterial medium). Protein and lipid contents are determined in obtained preparation and the combined analyses of biomarkers (CD9, CD63, CD81) and morphological traits confirmed presence of EVs with appropriate diameter. Treatment of isolated EVs with detergent showed reduced signal on flow cytometry which indicates the presence of lipid membrane structures.

Conclusion: Results obtained in this work show that immuno-affinity system based on nanobodies can be successfully used for isolation of EVs from human plasma. Due to its efficacy, simplicity and the low costs of nanobody production, this method has a great potential for future implementation in isolating EVs from human plasma in research and clinical settings for various diagnostic and investigative purposes.

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.

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