

## **Welcome to the GSEV Research Standards Working Group**

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The goal of this working group is to provide a forum for interaction and information to improve and standardise methods in extracellular vesicle (EV) research.

Research on EVs, may those be exosomes, microvesicles, oncosomes or any other cell-released membranous structures, is challenged by their specific nature, being of extremely small size and lacking clear subgroup marker. Hence, choosing the appropriated methods for characterisation and functional assays of EVs is of major importance, in order to gain reliable and reproducible data.

Recognising the need to implement standardised assays to ensure a maximum of reproducibility, high-quality research, and to optimise comparability of data, the GSEV “Research Standard” working group has been formed. We intend to build a network to share expertise, discuss the pros and cons of experimental setups or methods for EV analysis and eventually develop common protocols. In addition, we want to set up a straightforward platform that allows the exchange of protocols, direct communication with experts for specific applications (e.g. functional assays, flow cytometric analysis etc.) and offers hands-on help (e.g. lab visitations).

If you would like to contribute with your expertise or are interested to participate in efforts to optimise, standardise or validate existing or new techniques in EV research, you are welcome to join the group. Please write an email to: **kreiners(at)uni-bonn.de** or **julia.gross(at)med.uni-goettingen.de**

We are looking forward to hearing from you!

### **Take note:**

How to study extracellular vesicles properly:

The International Society of Extracellular Vesicles (ISEV) has updated their guidelines ‘Minimal Information for Studies of Extracellular Vesicles’ from 2014

Four years after the first release of “Minimal Information for Studies of Extracellular Vesicles’ (MISEV2014), ISEV has now updated these guidelines based on the additional knowledge gained over the last four years. In order to reach the highest possible consensus on these recommendations, a large group of ISEV scientists was involved through a community outreach (MISEV2018 Survey). The driving forces, Clotilde Théry and Kenneth Witwer did a formidable job and put a lot of effort into this manuscript, including the preparation and analysis of the online surveys.

The MISEV2018 paper provides a number of criteria that helps researchers to guide them in discriminating EV from non-EV components. These include recommendations regarding harvesting EVs from cell culture conditioned media or biological fluids. Furthermore, considerations for EV separation and concentration are addressed as well as important steps for proper EV characterization. A strong focus is on aspects regarding functional studies of EVs since over-interpretation or classical artefacts when analysing EV-functions is to be avoided by all means. The MISEV2018 guidelines include tables and outlines of suggested protocols and steps to follow to document specific EV-associated functional activities. The article also provides a very handy checklist summarising the major aspects to follow in EV science, giving a quick and global overview of the key points.

In addition to guidelines, transparent reporting of experimental parameters is a key step for development of research standards, in particular in an interdisciplinary field like EV-research. Hence, An Hendrix and colleagues developed the community-driven database EV-TRACK, which collects experimental parameters of EV studies. We encourage EV scientists to annotate their studies to this database, which may also help in the course of the reviewing process of a study.

Of course, the MISEV guidelines and EV-TRACK cannot cover all aspects of experimental and reporting requirements in detail, but they do provide a very good basis. It is in the interest of the whole EV research community to reach a wide acceptance and implementation of these recommendations. Thus, the GSEV strongly encourages to follow the MISEV recommendations in EV research, in order to further enhance standardisation and reproducibility in EV science.

The information is provided in a very condensed manner and might be challenging to read, especially for a scientist just starting to approach the EV field. Thus, members from the **GSEV Research Standards Working Group** as well as **GSEV board members** will be happy to discuss details and provide more elaborate explanations and support if needed. Please do not hesitate to contact us!

You'll find the paper here:

<https://www.tandfonline.com/doi/full/10.1080/20013078.2018.1535750>

#### **Links and Resources:**

<http://www.evflowcytometry.org> - EV Flow Cytometry Working Group

<http://isac-net.org/Resources/Microvesicle-Analysis-Interest-Development-Group.aspx> - Microvesicle Analysis Interest Development Group

<http://evtrack.org> - EV-TRACK: transparent reporting and centralising knowledge in extracellular vesicle research