GSCN Travel Awards: Participation Report

Annual Meeting for the International Society of Extracellular Vesicles
25-28th April 2019
Kyoto, Japan.

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Besides the long-term notion about the importance of growth factors and cytokines as a part of the cellular secretome, the idea that most of the cells also secrete large amounts of membrane-bound vesicles is relatively new. Those extracellular vesicles (EV) are spherical structures secreted by cells either constitutively or upon activation signals and have been only recently recognized as potential mediators of cell communication. However, most of the biochemical composition, their complex biogenesis and in particular the physiological role of these extracellular vesicles, remain to be characterised. The International Society for Extracellular Vesicles (ISEV) organises an annual premier international conference on extracellular vesicle research, covering the latest and featuring presentations from the top researchers in the field, as well as providing opportunities for talks from students and early career researchers.

This year the event was held in Kyoto, Japan, and consisted in three plenary sections, parallel sessions of symposiums on different topics and poster presentations. I am particularly interested in the fields of EV from stem cells, cancer research and inflammation, so I was preferentially attending to the sections related to these subjects. The talk that most called my attention was from Dr. Kazunori Kataoka, pioneer on studies of design supramolecular nanostructures and their application to drug and gene delivery systems. In his talk he presented supramolecular nanosystems self-assembled from designed block copolymers for therapy and non-invasive diagnosis of intractable diseases. Although being an artificial kind of vesicle, these nanosystems have promising clinical application and the EV research could lead to improvements on its design, by refining tissue specific homing and targeting.

I was also very intrigued by the presentation of Dr. Sai Kiang Lim on mesenchymal stromal cell (MSC)-derived EV for clinical application. In her talk, she defends that EV released by MSC shares the therapeutic efficacy from their cellular counterpart, and therefore are a good tool on therapeutics. However, due to complexity of EV isolations and the heterogeneity of MSC sources and cultures, the obtain of a standardized EV isolation is quite challenging, hampering data sharing by the research community and the regulation of those EV as therapeutic products. I do not share the same opinion that released vesicles hold the same therapeutic efficacy of their origin cells, at least not in the proportions presented by Dr. Lim. In my opinion, contradictory results found in literature could yes be due the lack of standardised methodology for sample isolation, but could also represent the need of better basic understanding before applying these vesicles into clinics. In this regard, I was very pleased by the join session "Combating unproven therapies from MSC to EV" organised by ISEV and ISCT committee. There was discussed themes like "stem-cell medical tourism" and the thread that this represents on stem cell research, and how a "EV medial tourism" can also end up negatively affecting EV research. Dr. Daniel J. Weiss, Chief Scientific Officer from ISCT, headed a short presentation on the subject and raised interesting points that where further discussed with ISEV members working on MSC-derived EV and their potential therapeutic application.

Finally, I was very excited about the Rigor and Standardisation Committee Meeting organised by members of ISEV Executive Board. In this meeting was stated the lack of standardisation in broad area of EV research and

suggested the organisation of commissions to address those research needs. I had the chance to see the main EV researchers debating on methodology that I have been struggling to apply in my daily PhD research, and could therefore see how new the field is and how much work still need to be done till we better understand the "hows and whys" cells release extracellular vesicles.

The novel highlights in the field were very well presented in short talks selected by the abstracts and in the poster presentation section. In special, I was pleased to hear about the recent studies presented by Dr. Bruno Nolasco on prolongation of allograft survival via donor MHC chimerism induced by EV, suggesting use of donor EV to induce chimerism and allograft survival with minimal conditioning and no risk of graft versus host disease.

In conclusion, research on extracellular vesicles is challenging due to the novelty of the field and lack of standardised methodology for isolation and characterisation. In the ISEV2019 I had the chance to learn about recent findings, identify the main groups working in the field and, mostly, build network by getting to know people interested in similar way of doing science. Therefore, I discussed my results with experienced researchers and had feedback regarding my data and possible collaborations. That was very positive to me, especially in this final step of my PhD degree, helping me to better discuss my results in the thesis but also opening new perspectives for my future career. This would not have been possible without this travel award, and for that I would like to express my sincere gratitude to the GSCN for giving me the chance to attend the ISEV 2019 meeting.