**Meeting report: 15th World Congress on Inflammation 2022**

The 15th World Congress on Inflammation 2022 (WCI2022) was a captivating 4-day event bringing together world-leading researchers to discuss all aspects of current inflammation research. The Leukocyte Trafficking Group from The University of Birmingham were fortunate enough to attend and present at WCI2022 and we have put together a meeting report containing our highlights from this experience.

The meeting was opened with an inspiring plenary lecture delivered by **Professor Alberto Mantovani**, “Inflammation as a metanarrative of modern medicine”. Prof Mantovani’s talk covered the role of inflammation in several diseases “from cancer to covid” and shared with us his work which lead to him receiving the Lifetime Achievement in Inflammation Award!

**Professor Daniela Salvemini** gave another fascinating plenary lecture the following day detailing novel therapeutic approaches for neuropathic pain. Prof Salvermini shared novel research from her group on using innovative antagonists alongside opioids to prevent opioid-induced hyperalgesia (OIH), a paradoxical-response whereby patients receiving opioids for pain management become overly sensitive to nociceptive pain.

The meeting was brought to a close by an informative plenary talk delivered by **Prof. Carlo Riccardi** describing the roles of glucocorticoids (GC) in inflammation. Although GC are currently used to treat a breadth of immune-mediated inflammatory diseases (IMIDs), they are associated with side effects and variable therapeutic responses. Prof. Riccardi highlighted the importance of improving these GC treatments, and proposed protein/peptide based drugs derived from the transcription products of GC-GC receptor interactions as a novel avenue of investigation for the treatment of IMIDs.

The rest of the meeting included a number of fascinating talks from invited speakers all across the globe, covering a diverse range of topics within current inflammation research.

*Our highlights included:*

We learnt about the role that estrogens play in macrophage homeostasis and inflammatory responses thanks to a thoroughly enjoyable talk given by **Prof. Elisabeth Vegeto (**Università degli Studi di Milano). One of the many novel findings included the observation that large peritoneal macrophages respond to surges in estrogen levels and can relocate to the endometrium during pregnancy.

**Mark Febbraio** (Monash University) gave a fantastic talk on targeting IL-6 signalling; highlighting the utility of the trans-signaling target, spg130Fc (Olamkicept), and the development and potential uses of “designer cytokine” IC7Fc (IL-6 with 1 gp130 substitution) which targets membrane bound IL-6 signalling and may have therapeutic potential in cardiometabolic disease, NASH and sarcopenia.

We heard about the protective role of dexamethone in arthritis severity by suppressing CCL17 by **Tanya Lapancu** (University of Melbourne).

[**Christophe Altier**](https://pubmed.ncbi.nlm.nih.gov/?term=Altier+C&cauthor_id=35608912) (University of Calgary, Canada) described the involvement of neuronal tyrosine kinase receptor ligand ALKAL2 as a biomarker for persistent pain and as a potential therapeutic target in neuropathic and inflammatory pain.

Results from mapping the first endothelial S-sulfhydrome, presented by **Sofia-Iris Bibli**, showed differentially S-sulfhydrated cysteines in native and cultured endothelial cells and highlighted the potential of using sulfhydration therapy to restore endothelial cell homeostasis.

**Andrea Cignarella** (University of Padova) delivered a fascinating talk on gender, endothelial function, and inflammatory arthritis. Andrea described the sex-related differences that can occur when culturing human umbilical derived endothelial cells, and how sex could influence the outcome of *in vitro* experiments and disease pathology.

**Claudia Cristiano’s** (University of Naples Federico II) ‘Potential effects of a synthetic FPR2 agonist on neuro-inflammation in the two mouse model of autism spectrum disorders’ was a very interesting talk. They have shown that increased neuro-inflammation actively plays a role in the behavioural defects seen in autism models. Further they have shown that regulation of neuro-inflammation can alleviate symptoms in these models after development.

*Poster and Oral Communications Session*

There was also a wide variety of interesting posters and short talks highlighting the breath of research being showcased at the conference. Over the 2 days, we saw poster presentations ranging from the effects of ageing, e.g. the long non-coding RNA H19 as a regulator in macrophages (**Schymik**), differences with sex e.g. the role of sphingosine-1 phosphate on sex-specific asthma features (**Granato**) and many reporting on novel drug targets or therapeutics, e.g. the use of GILZ synthetic peptide for the treatment of inflammatory bowel disease (**Paglialunga**). As well as many fascinating oral communications sessions including a rapid presentation from **Joyce Chiu** showcasing how the shear-dependent protein disulphide isomerase (PDI) activity regulating Mac-1 interactions with ICAM-1 could be targeted to reduce neutrophil migration in inflammation. The breadth of information and amount of unpublished data presented during these sessions was incredible to experience and really emphasised collaboration across the field of immunology.

These sessions also provided several early career researchers from our lab the fantastic opportunity to present their data. Jenefa Begum, Abbey Lightfoot, Imogen Wilson, Kathryn Frost, Mussarat Wahid and Oladimeji Abudu presented posters sharing research from our lab ranging from the effects of PEPITEM in bone (**Frost**) and as a therapy for rheumatoid arthritis (RA) (**Wahid and Abudu**), to the characterization of age associated B cells in RA (**Wilson**) which provided an excellent opportunity to receive feedback to help enhance current strength point and help tackle current obstacles in our projects from other experts. **Sophie Hopkin** (age-associated dysregulation of leukocyte trafficking during acute inflammation), **Julia Manning** (metabolite signatures in defining disease) and **Poppy Nathan** (mechanisms of cleavage of PEPITEM, a novel immuno-regulatory peptide) were also awarded the opportunity to present their data in the oral communications sessions. As early career researchers, the opportunity to network and learn from other inflammatory researchers was invaluable and was beneficial to both our individual projects and our training as academins.

Overall, WCI2022 was a great event with a truly collaborative atmosphere and allowed us to learn so much from experts within our field. This sharing of knowledge is not only integral to our development as young researchers, but for the development of the immunology field as a whole. We would like to thanks WCI for providing us with the opportunity to meet other experts within our field and allow us to share our research in such a friendly, exciting environment.

*“This conference gave so many opportunities to present posters and give oral communications, alongside experienced scientists, which was very motivating. It was great to get an alternative perspectives from more experienced scientist who were very engaged with all participants, regardless of career stage. Overall, this was a positive experience and has given me a fresh perspective on my project which is very exciting!” – Danielle Lezama, PhD Student, Unviersity of Birmingham*

*“I am on the brink of finishing my PhD and will soon be looking for employment, meeting other researchers and making myself known to the wider scientific community was extremely beneficial to me in terms of employability.” – Sophie Hopkin, PhD Student, University of Birmingham*

*“The poster session provided me with a great opportunity to talk to fellow researchers about my work. This gave me a new perspective about my project and some suggestions for future experiments. I also learned about a lot of new techniques that are currently used my area of interest.” - Mussarat Wahid, Research Fellow, University of Birmingham*

* **Leukocyte Trafficking Group, University of Birmingham**

Poppy Nathan, Sophie Hopkin, Imogen Wilson, Abbey Lightfoot, Danielle Lezama, Jenefa Begum, Julia Manning, Kathryn Frost, Oladimeji Abudu, Mussarat Wahid and Mustafa Sevim