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ESACT-UK bursary conference report:

Cell Culture Engineering XVI, Tampa, Florida, May 6th-11th, 2018

I attended the Cell Culture Engineering conference which gathered ~400 scientists, ~30% from academia and 70% from industry, and at which was presented novel advances in the cell culture field with a focus on Chinese Hamster Ovary (CHO) cell culture. Other topics discussed at the conference included alternative expression systems, cell and gene therapy and novel gene editing approaches. I learnt more about cell-free expression systems and some other cell lines that are currently being used for the manufacturing of biologics, such as insect cell platforms, HEK293 and NS0. Regulatory strategies, especially for novel format of molecules and novel therapy such as CAR-T cells, were also presented. It was interesting to learn about what other companies are doing to push the boundaries of productivity, and how advances in process development have enabled researchers to manufacture even large quantities of difficult to express proteins. Finally, with the popularisation of 'omics and genome editing methods such as CRISPR/Cas9, many researchers presented how they utilise those new tools to engineer CHO cell lines for better productivity and product quality. It was also discussed how those tools might be used to engineer non-CHO cell lines to perform post-translational modifications that so far have only been capable to do in CHO cell lines.

This conference was an ideal platform to present early results of my work internationally. The poster I submitted, entitled 'Single cell characterization of Chinese hamster ovary cells', was presented in the 'Clonality and Stability' section over two evenings for two-hours poster sessions. This enabled me to present my work to both academics and scientists from the industry. The poster sessions were a good opportunity to network, as were the coffee breaks and conference meals which allowed me to meet other graduate students, the conference organising committee, academics and professionals in the industry.

I was also able to attend two workshops: 'How can interactions within the 'biomanufacturing ecosystem' deliver value?' and 'Advances in cell line engineering and protein expression strategies'. These workshops were a fantastic opportunity to meet people in smaller groups and discuss the current situation and future of the biotechnology industry and CHO cells. My favourite idea that was discussed was around the fact that there are currently so many reports of different strategies, from both industry and academia, to increase the productivity of the cells: what if there was a "neutral" organisation that could combine all the different strategies to create a cell line with a potential that could reach new high level of productivity, and that could then be used by anyone that would have participated? A lot of the discussions emphasized the need for better ways of sharing knowledge and access to technology (media, cell lines, etc) between industry and academia. These were very interesting discussions and think tanks highlighting some of the future challenges that we will face as a community. As an early career researcher, I felt that these discussions with people senior in the field are essential to give guidance and make us think about what role we might be able to play in shaping a better future for our industry and community.

This conference was very interesting and having been able to attend it has enriched my knowledge of the cell culture field and my network. I would like to thank my supervisors Claire Pearce, Claire Harris, Christopher Sellick and Mark Smales, as well as MedImmune and the University of Kent for supporting me, and ESACT-UK for their generous support.