

Conference report of the 52nd annual scientific meeting of the International Society for Experimental Hematology (ISEH) 17th – 20th August 2023, New York City, NY, USA - Report by Marius Külp, University Hospital Frankfurt

The 52nd ISEH annual scientific meeting covered a multitude of hematologic research highlights. The Donald Metcalf Lecture was awarded to “Peggy” Goodell who gave a very personal insight into her scientific career. Her fascinating talk went along various projects, one of them being her seminal characterization of DNMT3A as a tumor suppressor and the implications of *DNMT3A* mutations in Tatton Brown Rahman syndrome. The scientific sections of her presentation alternated with summaries of lessons she learned during her career. She gave advice about the most important prerequisites of successfully running a research lab which were a great inspiration for me personally.

Another highlight of the conference was the talk of Michel Sadelain, reviewing and summarizing the current developments in CAR T cell research. As a CAR T cell pioneer, Sadelain provided personal insights and newest approaches aiming to increase the CAR's selectivity and safety, in example through co-expression of additional regulatory CARs.

Infant leukemias, as one of my research interests, were addressed by Anandita Roy and Katrin Ottersbach. Roy introduced a CRISPR/Cas9 mouse model developed in her group to induce *KMT2A::AFF1* fusion oncogenes in mice leading to infant-like proB-ALL development. This is a major achievement in the field as most other approaches to faithfully model the disease failed. Ottersbach provided insights into developmental hematopoiesis with a focus on hematopoietic stem cell development depending on different embryonic regions and potential differences in infant leukemia onset. Both talks were an excellent preparation for my poster presentation, in which I discussed the identification of novel markers for gene expression-based risk stratification in infant *KMT2A*-rearranged ALL. A lot of discussion at my poster with other young investigators as well as established professionals in the field fostered inspiration and ideas how to successfully proceed with the project.

Besides, a research area I am now focusing on are RNA modifications and expressional differences in hematopoiesis. This topic was perfectly addressed by the presentation of Manel Esteller introducing the role of epitranscriptomics in hematologic malignancies. Esteller explained mRNA modification (m1A) specific immunoprecipitation as a tool to interrogate the epitranscriptome by next generation sequencing. He demonstrated that lineage switch, also referred to as transdifferentiation, is mediated by methyltransferases resulting in m6A methylation of different mRNAs. In this context, Esteller showed that drugs targeting m6A methyltransferases were effective in preventing transdifferentiation *in vitro* and *in vivo*.

Another brilliant talk related to this topic was given by Daphna Nachmani. She introduced her research identifying ribosomal heterogeneity throughout the hematopoietic system. Cell-type specific ribosomes enable cell-specific gene expression and translation. She characterized ribosomal heterogeneity to occur due to differences in the rate, fidelity and specificity of ribosomal proteins, rRNA and ribosomal modifications. Nachmani used RiboMeth-seq and HydraPsi-seq to identify small nucleolar (sno) RNAs as mediators of HSC differentiation block. Knock-out of respective snoRNAs in HSC resulted in fostered differentiation and reduced stemness.

In summary, I discussed my personal highlights of the conference which really stimulated new ideas for experiments and inspired my research. I have the feeling that the strong interaction with other young researchers and experienced professionals support me on my way to become an independent scientist and to settle in the scientific community. Additionally, it was a wonderful experience to dive deeper into scientific and personal exchange with other conference attendants while discovering New York City in the evenings after the conference and during the social event.

I am deeply grateful that the GSCN travel grant enabled me to participate in this scientific meeting leading to so much feedback on my current research as well as new inspirations for future projects by so many brilliant and fascinating talks and presenters.