

GSCN Travel Award Report

Clinical Epigenetics International Conference | CLEPIC 2026

Erik Meyer, Institute for Stem Cell Biology, RWTH Aachen University Medical School

I would like to express my sincere gratitude for receiving the GSCN Travel Award. This support enabled me to attend the Clinical Epigenetics International Conference (CLEPIC 2026), held from June 10-12, 2026, at the Josep Carreras Research Institute in Badalona, Spain. As my first international conference as an early-stage PhD student, this experience represented an important milestone in my scientific development and provided valuable opportunities for both professional and personal growth.

The conference featured an outstanding scientific program covering a broad spectrum of topics, ranging from histone modifications to disease-specific DNA methylation patterns. In addition to core topics in clinical epigenetics, several presentations highlighted the relevance and application ability of epigenetic mechanisms across diverse biological systems. One particular memorable presentation was given by Dr. Jason Gardiner, who discussed epigenetic regulation in plants and demonstrated how invasive species adapt to new environments through cellular reprogramming and subsequent clonal expansion. These mechanisms contribute to viral suppression, cold tolerance, and stress adaptation, sharing intriguing parallels with immune responses in humans.

A central theme throughout the conference was the concept of epigenetic networks and their role in health and disease. In this context, the presentation by Professor Dawn DeMeo was particularly insightful. She emphasized the importance of considering complex, interconnected environmental factors, like smoking, nutrition, pollution, and stress, when studying disease mechanisms and developing therapeutic strategies. Her group has developed network models that integrate transcription factor binding, chromatin accessibility, and sex-specific effects. These approaches may help explain why identical immune dysfunctions can result in different disease susceptibilities, such as higher prevalence of autoimmune diseases in women and non-reproductive cancers in men.

Another major topic of discussion was targeted epigenetic editing using dCas9-TET1 systems to modify specific CpG sites. This approach is of particular relevance for my own research interests. Dr. Jamie Hackett presented compelling examples demonstrating how such technologies can be used to investigate the causal relationships between genetic and epigenetic regulation as well as how they may be applied therapeutically, including the correction of Sim1 haploinsufficiency-associated obesity.

The conference also highlighted the fundamental role of epigenetic regulation in stem cell differentiation. In particular, GDH1 was discussed as a key regulator of the transition from naïve to primed stem cells. Together with metabolites such as alpha-ketoglutarate, which maintains naïve states in naïve cells while promoting differentiation in primed cells, these mechanisms were presented within the framework of a “nuclear nanoreactor”. This model regulates the balance and distribution of DNA methylation.

I was honored to be selected for an oral presentation entitled: "Optimizing T cell expansion: Mitigating DNA methylation changes with Decitabine and Vitamin C". Presenting my work provided an excellent platform for scientific discussion and constructive feedback from experts in the field. The resulting exchanges generated valuable ideas and perspectives that will directly contribute to the further development of my PhD project.

Furthermore, the conference provided the opportunity to meet collaborators involved in my joint-PhD project, Dr. Gerardo Ferrer and Karim Yassine from the Josep Carreras Research Institute. Establishing and strengthening these collaborations through face-to-face interactions proved exceptionally valuable and facilitated discussions that would have been difficult to achieve through virtual meetings alone.

In conclusion, attending CLEPIC 2026 was an exceptionally rewarding experience. The conference provided novel scientific insights, inspiring research ideas, stimulating discussions, and valuable networking opportunities with leading experts in the field. It also allowed me to strengthen collaborations.

I am sincerely grateful to the GSCN for making this opportunity possible and for supporting my professional development.

Sincerely,
Erik Meyer