German research advances in cancer and blood disorders reported in human gene therapy

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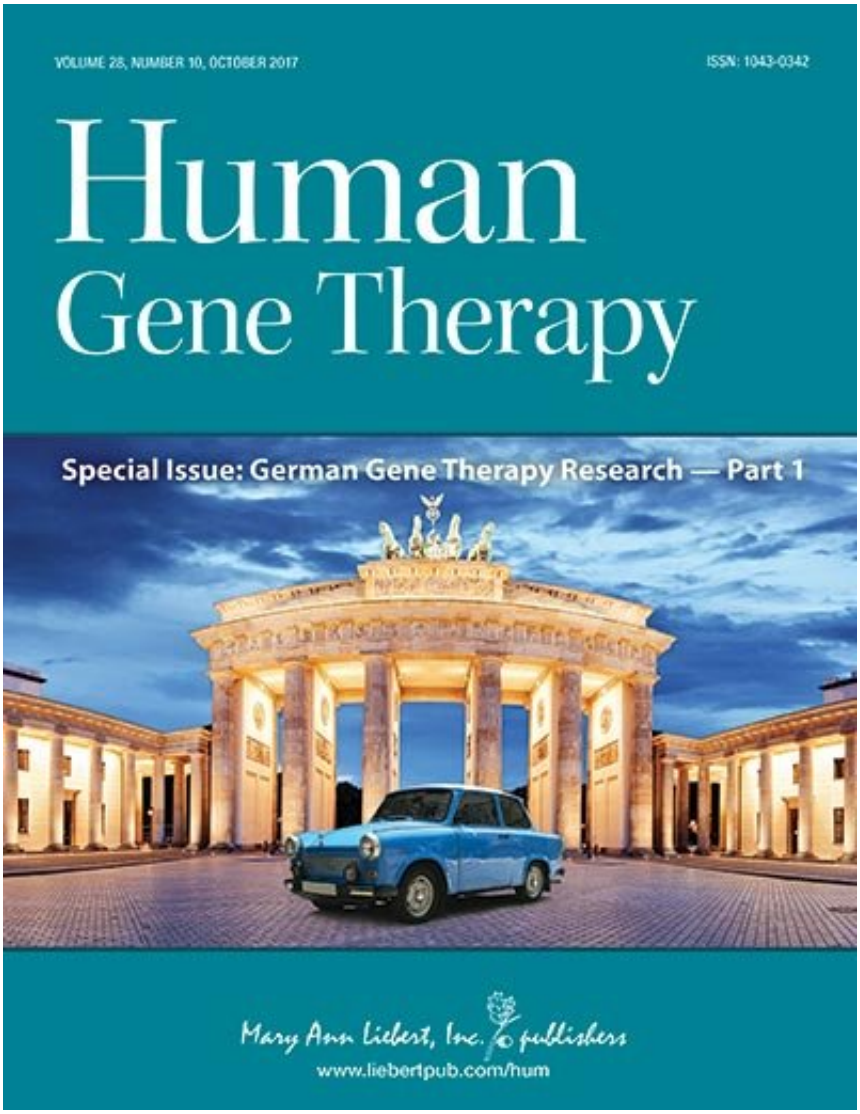

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Virotherapy capable of destroying tumor cells and activating anti-tumor immune reactions, and the use of engineered hematopoietic stem cells (HSCs) to deliver replacement genes that have the potential to cure blood diseases are among the key areas of gene therapy being advanced by German researchers and highlighted in a special issue of *Human Gene Therapy*.

The special focus issue entitled "German Gene Therapy Research—Part 1 ," was developed by Guest Editors Christof von Kalle, MD, Boris Fehse, PhD, and Hildegard Büning, PhD. Dr. Büning, Hannover Medical School, is Editor of Human Gene Therapy Methods and serves as Chair of the 25th Anniversary ESGCT Congress, October 17-20, in Berlin.

In the special issue, Guy Ungerechts and Christine Engeland led a team of colleagues from Germany and Luxembourg in coauthoring the review article entitled "Virotherapy Research in Germany: From Engineering to Translation." The researchers present the latest preclinical and clinical research activities to engineer oncolytic viruses, which selectively infect tumor cells, for use in tumor-targeted gene therapy. They discuss the different types of virus platforms being investigated—including adenovirus, arenavirus, measles vaccine virus, parvovirus, and vaccinia virus—and the potential to take advantage of the immunotherapeutic properties of oncolytic viruses and of their use in combination with other types of pharmaco-, radio-, and immunotherapy.

In the review article "Promises and Challenges in Hematopoietic Stem Cell Gene Therapy," Saskia Kohlscheen, Halvard Bonig, and Ute Modlich, Paul-Ehrlich-Institute (Langen), Goethe University (Frankfurt), German Red Cross Blood Service Baden-Württemberg-Hessen (Frankfurt), Germany, and University of Washington, Seattle, describe the state-of-the-art in HSC-directed gene therapy, including

viral vector delivery systems, transduction of HSCs, and protocols prior to HSC transplantation. The researchers discuss the main targets for this innovative approach, focusing on immunodeficiencies and inborn errors of metabolism, what has been learned to date from the limiting clinical studies performed, and how best to move forward to overcome the challenges the field still faces.

"The rapid pace of innovation among gene and cell therapy researchers in Germany is striking and significant," says Editor-in-Chief Terence R. Flotte, MD, Celia and Isaac Haidak Professor of Medical Education and Dean, Provost, and Executive Deputy Chancellor, University of Massachusetts Medical School, Worcester, MA. "We are very proud to reflect the impact of German gene therapy science in this special issue of *Human Gene Therapy*."

More information: Guy Ungerechts et al, Virotherapy Research in Germany: From Engineering to Translation, *Human Gene Therapy* (2017). DOI: 10.1089/hum.2017.138

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