Researchers report longest duration of therapeutic gene expression

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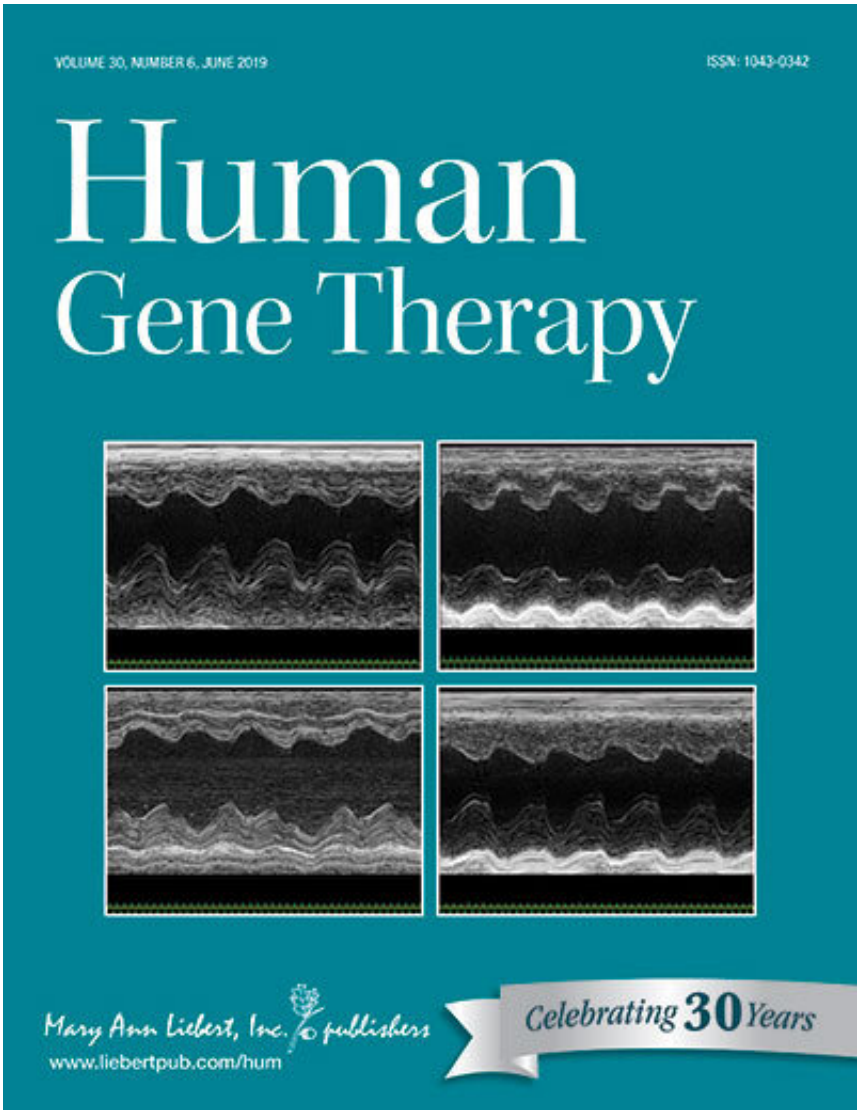

Human Gene Therapy, the Official Journal of the European Society of Gene and Cell Therapy, British Society for Gene and Cell Therapy, French Society of Cell and Gene Therapy, German Society of Gene Therapy, and five other gene

A therapeutic gene delivered into the spinal canal of infant rhesus monkeys was still being expressed after nearly 4 years, with no evidence of acute or chronic neuronal toxicity, according to a new study published in *Human Gene Therapy*.

The article entitled "Safe and Sustained Expression of Human Iduronidase After In-trathecal Administration of Adeno-Associated Virus Serotype 9 in Infant Rhesus Mon-keys" was coauthored by James M. Wilson, MD, Ph.D., University of Pennsylvania, Pe-relman School of Medicine (Philadelphia) and a team of researchers from the Universi-ty of Pennsylvania, University of West Indies (Kingston, Jamaica), and University of California, Davis School of Medicine and California National Primate Research Center.

Dr. Wilson's group used intrathecal injection to deliver adeno-associated virus 9 (AAV9) vectors carrying the gene for the alpha-I-iduronidase (IDUA) enzyme. This en-zyme is deficient in mucopolysaccharidosis type I (MPS I), an inherited lysosomal stor-age disease also known as Hurler disease.

Based on the safety and long-term potency of AAV9-IDUA delivery via the cere-berospinal fluid demonstrated in this study in newborn monkeys, the authors conclude that the clinical development of this method of gene therapy should be pursued for ear-ly-onset severe forms of neuropathic storage diseases such as MPS I.

"The problem of physical delivery of AAV vectors to the appropriate cells remains a significant technical hurdle in gene therapy for disorders

affecting the central nervous system," 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. "Studies like this one provide criti-cal information on the feasibility of delivery approaches that could directly translate to human infants suffering from these fatal diseases."

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More information: Juliette Hordeaux et al, Safe and Sustained Expression of Human Iduronidase After Intrathecal Administration of Adeno-Associated Virus Serotype 9 in Infant Rhesus Monkeys, *Human Gene Therapy* (2019). DOI: 10.1089/hum.2019.012

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