

Treatment of Diabetes and Obesity with CRISPR-Mediated Genome Editing in Epidermal Progenitor Cells

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Somatic gene therapy with current genome editing technology provides a promising therapeutic approach for treatment of a variety of otherwise terminal or severely disabling diseases. The human skin is a tempting target for genetic engineering as it is the biggest and most accessible organ in our body. Moreover, skin epidermal stem/progenitor cells are easy to obtain and expand *in vitro*, and extraordinary advances have been made in the development of epidermal autograft or tissue-engineered skin equivalents for permanent skin regeneration in clinics. In this report, by combining CRISPR-mediated genome editing with epidermal progenitor cell platform, we develop skin graft with controllable release of GLP1 (glucagon-like peptide-1), a critical incretin that regulates blood glucose homeostasis, and demonstrate its therapeutic effect *in vivo* by reducing glycemic excursions in diet-induced obese and diabetic mice. Taken together, our study lays the essential groundwork for development of long-lasting and safe gene therapy approach for combating obesity and diabetes, and unravels the clinical potential for genome editing in skin epidermal progenitor cells.

Biography:

Dr. Xiaoyang Wu received his PhD in 2000-2006 from Cornell University. He was post doctorate fellow from Rockefeller University, in 2006-2011. From 2011-present, is working as an Assistant Professor at University of Chicago, USA.