Progress in Molecular Biology and Translational Science

Advances in CRISPR-Cas systems for blood cancer

Monchusi, Bernice A
Council for Scientific and Industrial Research (CSIR)
Meiring Naude Drive, Pretoria, 0184
Email: Bmonchusi1@csir.co.za

CRISPR-Cas systems have revolutionised precision medicine by enabling personalised treatments tailored to an individual's genetic profile. Various CRISPR technologies have been developed to target specific disease-causing genes in blood cancers, and some have advanced to clinical trials. Although some studies have explored the in vivo applications of CRISPR-Cas systems, several challenges continue to impede their widespread use. Furthermore, CRISPR-Cas technology has shown promise in improving the response of immunotherapies to blood cancers. The emergence of CAR-T cell therapy has shown considerable success in the targeting and correcting of disease-causing genes in blood cancers. Despite the promising potential of CRISPR-Cas in the treatment of blood cancers, issues related to safety, ethics, and regulatory approval remain significant hurdles. This comprehensive review highlights the transformative potential of CRISPR-Cas technology to revolutionise blood cancer therapy.