Two sides of the same coin: The roles of KLF6 in physiology and pathophysiology

ABSTRACT

The Krüppel-like factors (KLFs) family of proteins control several key biological processes that include proliferation, differentiation, metabolism, apoptosis and inflammation. Dysregulation of KLF functions have been shown to disrupt cellular homeostasis and contribute to disease development. KLF6 is a relevant example; a range of functional and expression assays suggested that the dysregulation of KLF6 contributes to the onset of cancer, inflammation-associated diseases as well as cardiovascular diseases. KLF6 expression is either suppressed or elevated depending on the disease, and this is largely due to alternative splicing events producing KLF6 isoforms with specialised functions. Hence, the aim of this review is to discuss the known aspects of KLF6 biology that covers the gene and protein architecture, gene regulation, post-translational modifications and functions of KLF6 in health and diseases. We put special emphasis on the equivocal roles of its full-length and spliced variants. We also deliberate on the therapeutic strategies of KLF6 and its associated signalling pathways. Finally, we provide compelling basic and clinical questions to enhance the knowledge and research on elucidating the roles of KLF6 in physiological and pathophysiological processes.