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The emerging role of RUNX1 in cardiovascular diseases

Abstract: RUNX1, the Runt-related transcription factor-1, is a member of the core-binding factor family of transcription factors. RUNX1 has been involved in diverse cellular mechanisms and signaling pathways in multiple organs and systems. RUNX1 is thought to be a master regulator of development which acts at the top level of signaling cascades and dictates cell fate during developmental events. RUNX1 was best characterized in the hematopoietic system because of its involvement in blood cancer genesis. Recently, a role that RUNX1 plays in the heart has come prominence and it has been identified as a therapeutic target for cardiovascular diseases, such as myocardial infarction, adverse cardiac remodeling, and heart failure. Here, we present our recent progress in the study of RUNX1 using animal disease models of myocardial infarction and ischemic stroke. Our data suggest that inhibition of RUNX1 reduces the expression of cathepsins, the lysosomal proteases, after ischemic injury. Through repressing cathepsin-mediated cell death, inhibition of RUNX1 shows protective effect against myocardial infarction. Our results suggest that RUNX1 is a promising target for cardiovascular diseases with the translational potential to reduce infarct size following ischemic injury.

Keywords: RUNX1, Cathepsin, Cell death, Myocardial infarction, Ischemic stroke

Biography: Weihong He is a principal investigator and associate professor at the Department of Physiology, West China School of Basic Medical Sciences and Forensic Medicine, Sichuan University. Weihong obtained an MD (2012) at West China School of Medicine & West China Hospital, Sichuan University, and completed a PhD (2017) at the BHF Glasgow Cardiovascular Research Centre, University of Glasgow. Weihong was associate professor at Jining Medical University (2018-2020). Since 2020, Weihong has led a research group to study the pathophysiology of cardiovascular diseases and to investigate novel therapeutic drugs for the treatment of myocardial infarction and cerebral infarction at Sichuan University. He also teaches physiology and mentors both national and international students. Weihong has expertise in a number of methodologies which span the level of biochemistry, cell biology, isolated organ, and whole animal in vivo disease models.