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Zebrafish as genetic model for investigating the role of BCL6A and its regulation via STAT5

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Introduction: BCL6A has been recognized as an important transcription factor in the control of normal B cell development, as well as its disruption in B cell lymphoma, but with emerging roles in the development and function of other cell populations. A key aspect of BCL6A function is its transcriptional regulation by STAT5, which is activated by a number of cytokines, while there is evidence that BCL6A modifies STAT5 target gene regulation.

Methods: Bioinformatic analysis of zebrafish gene databases using tBLAST with human BCL6A and BCL6B sequences and alignment of the human BCL6A and zebrafish BCL6A proteins. The embryonic expression pattern of zebrafish BCL6A and regulation of BCL6A expression by STAT5, wild-type, stat5.1$^{-/-}$ and stat5.2$^{-/-}$ embryos were investigated by whole-mount *in situ* hybridization. The zebrafish BCL6A gene was targeted using genome editing with CRISPR/Cas9 designed to a region of exon 3 encoding the BTB/POZ domain to generate a BCL6A knockout zebrafish and used to analyze the growth and survival phenotype of the knockout. Additionally, Lymphopoiesis and macrophages activity was investigated through wound assay and immune challenge assay.

Results: Identification of zebrafish BCL6A with conserved structure and regulation, encoding a protein with high identity to human BCL6A. Ablation of BCL6A has shown severe retardation in growth, development, and survival of zebrafish.

Conclusion: Zebrafish represent an ideal model for investigating the BCL6A role in hematopoiesis and immunity.

Biography

Farooq Almohaisen was born in Iraq in 1982. He received the BVMS and MScM, degrees from the University of Basra in Iraq in 2005 and 2010, respectively. He joined the Southern Technical University in 2010 were he currently lecture.He started his PhD degree at the School of Medicine at Deakin University, Australia in 2014. His main work focused on the role of B cell lymphoma 6A protein (BCL6A) in zebrafish. He used CRISPR/Cas9 in editing BCL6A gene and investigate the bcl6a knockout on the immune system, growth and survival in zebrafish.

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