

LEARNING BRAIN REGENERATION FROM ZEBRAFISH (DANIO RERIO)

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The emergence of zebrafish as a valuable model of vertebrate development and disease physiology has been a milestone in the past three decades. It has given us many profound insights into the cellular and molecular mechanisms of numerous physiological phenomena and diseases. One of the most intriguing eminences about zebrafish is its astonishing ability to regenerate its brain after an injury. Proportionately, the area of the brain in adult zebrafish brain dedicated to adult neural stem cells (aNSCs) is much higher than in the mammalian brain. Also, the aNSCs in zebrafish brain are distributed throughout the rostrocaudal axis. Consequently, zebrafish can endure and repair an injury in almost any part of the brain. In contrast, mammalian brain owing to its limited number of stem cells restricted to only a few brain regions has an abysmal regenerative ability. This compels us to ask two fundamental questions: what cellular and molecular mechanisms give zebrafish this extraordinary brain regenerative capacity? What pieces of those mechanisms are missing in the case of mammals? If only we could figure these out, it can direct us to new paths to the discovery of novel and useful therapies for neurodegenerative diseases, traumatic brain injury, stroke and other medical conditions involving the loss of neurons. But before this anticipation can be translated into clinical practice, we have to go a long way understanding the basics of brain regeneration in zebrafish.

Biography

Surendra Kumar Anand is a 2nd year PhD student from the Laboratory of Cellular and Molecular Neurobiology (Lab 215), SLS, JNU working under the supervision of Dr Amal Chandra Mondal, Associate Professor, SLS-JNU. He has published a review article and a research article in reputed international journals. He won the best poster award in 22nd International Conference on Neurology and Neurophysiology, 2018, Rome, Italy. He was also awarded the FENS and IBRO-PERC stipend to attend the Neural Circuit Development and Plasticity course at Utrecht Summer School, 2018, Utrecht, the Netherlands. Besides, he has five poster presentations, one oral presentation and volunteering experience in national and international conferences and symposia.

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