Zebrafish offer a Toolbox for Curing Blood Disorders

David Traver
Professor, Cellular and Molecular Medicine

CURRENT RESEARCH

Understanding how stem cells are born during embryonic development

Many blood cell disorders, such as leukemia, require bone marrow transplantation to treat them. This requires a genetic match from donor to patient, which is often impossible to find. If scientists were able to understand the full complement of genetic cues utilized to make blood stem cells during embryonic development, they could replicate this process in the test tube to generate perfectly matched stem cells for lifelong curative therapies. Dr. David Traver, Professor of Cellular and Molecular Medicine at the University of California, San Diego, studies the biology of stem cells, using zebrafish, a small translucent tropical freshwater fish. He and his team are working to understand how stem cells that generate all of the blood cells in our bodies for life are first born in the embryo. Answers to this question will have key implications in understanding how these rare but potent cells self-renew themselves, how they give rise to leukemia when deranged, and how we may replicate their normal development in the test tube to ultimately generate blood stem cells for any patient in need.

Dr. Traver and his team have pioneered the use of zebrafish to study the biology of blood-forming stem cells. They were the first to image directly the birth of these stem cells in their native environment due to the optical transparency of the zebrafish embryo. Despite the zebrafish's many differences from humans, their genetic code is very closely related to humans. Therefore, the study of zebrafish can unravel mysteries about our own systems in novel ways. In addition, they have taken advantage of the powerful genetics of zebrafish to identify new, unexpected pathways that regulate stem cell emergence. In fact, thanks to their...

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AFFILIATION

University of California, San Diego

EDUCATION

- Ph.D., 2000 , Stanford University

AWARDS

- McDevitt Prize for best Ph.D. Thesis, Stanford University, 2000
- Career Development Award, National Institutes of Health, 2004-2008
- Scholar Award, American Society of Hematology, 2006-2009
- Innovative Science Award, American Heart Association, 2012-2015
- Scholar Award, Leukemia and Lymphoma Foundation, 2012-2017
- and 1 more...

RESEARCH AREAS

Life Science, Immunology / Inflammatory, Oncology / Cancer, Regenerative Medicine

FUNDING REQUEST

Your contributions will support the continued research of Dr. David Traver, of the University of California, San Diego, as he helps to understand how the stem cells that generate all the blood cells in our bodies for life are first born in the embryo. Donations of approximately $1M/year will sustain the level of personnel in his lab, including experimental expenses. Thus, in choosing to donate, you can ensure that the incredible research of Dr. Traver continues at an impactful pace.