



Dynamic 3D holography of live zebrafish

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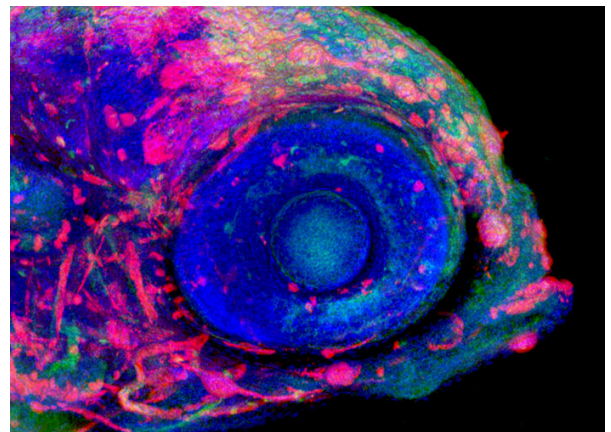
Department: Division of Biological Engineering

Pre-requisites to do this project: You must currently be in your penultimate year (2011)

This project is open to: All students from the Faculty of Engineering who have a keen interest in biological systems and students studying a **Biomedical Science** degree.

The Problem

Zebrafish are a common model for human development, and as they are transparent until 6 weeks of age, they are ideal for laser based imaging techniques. Current techniques, such as confocal microscopy, are capable of providing stunning 2D images, but are unable to provide dynamic 3D movies. Dynamic imaging is required to study and measure the flow within the developing zebrafish heart, which shares many features with the human cardiovascular system.



Holographic image of a five-day-old zebrafish. Image Courtesy: University of Utah.



PhD student Zac Ismadi preparing an experimental setup in LDI's facilities. Image Courtesy: LDI.

The Project

You will develop and apply a holographic microscopy system within the LDI Lab to image and study the 3D structure and flow within a zebrafish heart. The flows will be visualized and measured using combined laser holography and tomography based imaging and image reconstruction techniques.

To achieve success in this challenging project, interest in **biomedical research** and **imaging** will be essential. The successful candidate will be required to work in a team including engineers and physicists.

Facilities

- LDI experimental facilities
- World-leading image analysis suite

This project is offered by the Division of Biological Engineering

For more information about the Laboratory for Dynamic Imaging, please visit: <http://www.mubeta.monash.edu/>

