Cellular laser microsurgery illuminates research in vertebrate biology

17 August 2011

Using an ultrafast femtosecond laser, researchers at Tufts University in Medford, Mass., were able to label, draw patterns on, and remove individual melanocytes cells from a species of frog tadpole (Xenopus) without damaging surrounding cells and tissues. Melanocytes are the cells responsible for skin pigment; they also are descendants of a specific type of stem cell that has regenerative potential and other characteristics similar to some cancer cells.

By precisely marking and ablating these cells, the researchers were able to track how melanocytes migrated and regenerated within a live organism. The researchers hope this technique will enable new avenues of research in wound repair, regenerative medicine, and cancer studies. The new method could also be used to study how certain organisms respond to spinal cord damage and how they are able to regenerate portions of their spinal cords.

According to the researchers, femtosecond lasers have already become important tools in biological studies because of the ability to affect highly localized tissues. The laser in their research, described in the August issue of the Optical Society's (OSA) open access journal *Biomedical Optics Express*, operated at a wavelength of 800 nm, which more readily affected melanocytes while protecting surrounding tissues. This highly selective characteristic enabled the study of cells both on the surface of the skin and in deeper tissue.

More information: Paper: "Patterned femtosecond-laser ablation of Xenopus Laevis melanocytes for studies of cell migration, wound repair, and developmental processes," Mondia et al., *Biomedical Optics Express*, Volume 2, Issue 8, pp. 2383-2391. www.opticsinfobase.org/boe/abs … cfm?uri=boe-2-8-2383

Provided by Optical Society of America

APA citation: Cellular laser microsurgery illuminates research in vertebrate biology (2011, August 17) retrieved 22 October 2021 from https://phys.org/news/2011-08-cellular-laser-microsurgery-illuminates-vertebrate.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.