

Announcement

A Life-Span Atlas for the Zebrafish

An anatomical atlas is an essential reference for any experimental organism in which form and function are of interest. After a dozen years of explosive growth as a model organism, the zebrafish is finally getting its own atlas.

In 1995, Kimmel and colleagues published the famous zebrafish embryonic staging series (http://zfin.org/zf_info/zfbook/stages/index.html) that adorns the wall of many a zebrafish laboratory.¹ Wolfgang Driever then volunteered his lab's plastic sections of 24, 48, 72, and 120 hour old embryos (http://zfin.org/zf_info/anatomy.html) as a starting point for an atlas of histological anatomy. In 1999, community-wide interest in a comprehensive life-span atlas was articulated in a Zebrafish Anatomic Dictionary meeting at the NIH (http://zfin.org/zf_info/anatomy/dict/mtg2.html). The plan emerging from this meeting was to create web-based atlas resources.

The web-based atlas resources for the zebrafish community were to include the gorgeous whole mount *in situ* images of the Thisse and Dawid labs, a 3D embryonic atlas by the Verbeek lab (<http://bio-imaging.liacs.nl/>), and a life-span atlas by the Cheng and Moorman labs. These resources would ultimately be integrated with mutant, morphant, and disease data through ZFIN.

NIH (NCRR) funding for the life-span virtual atlas of the zebrafish began in July 2004. This atlas will be based on serial tissue sections stained with hematoxylin and eosin. Each section will then be digitized into virtual slides using high power microscope objectives (Cheng lab). Server-based software and image files will then be used to turn any computer with a high-speed internet connection into a virtual microscope. The virtual slides will also be used to generate 3D recon-

structions (Moorman lab). Standardization of data collection and formats, and integrations with other databases are being planned. Anatomical terms are currently being chosen to facilitate accurate cross-referencing across phylogeny.

The zebrafish atlas comprises a foundation for cross-phylogenetic, life-span integrations of anatomy with gene expression and functional data, which we are calling Systems Morphogenetics. A FASEB symposium dedicated to this topic will take place in April 2005. Progress on the atlas project can be found at ZFatlas.psu.edu. We have been developing a number of related, collaborative projects with engineers, computer scientists, and other zebrafish labs. Questions about joining the atlas effort, as well as details regarding histology and virtual slides, may be sent to kcheng@psu.edu. Questions about details of 3D reconstruction and anatomy should be sent to Stephen.Moorman@umdj.edu. All inquiries pertaining to the atlas should be copied to the zebrafish atlas coordinator (Christina Wentz, caw244@psu.edu, through July 2006).

REFERENCE

1. Kimmel CB, Ballard WW, Kimmel SR, Ullman B, Schilling TF. Stages of embryonic development of the zebrafish. *Dev Dyn* 1995;203:253-310.

Keith C. Cheng
Jake Gittlen Cancer Research Institute
Penn State College of Medicine
500 University Drive
Hershey, PA 17033

E-mail: kcheng@psu.edu

