

Progress in fish larval nutrition

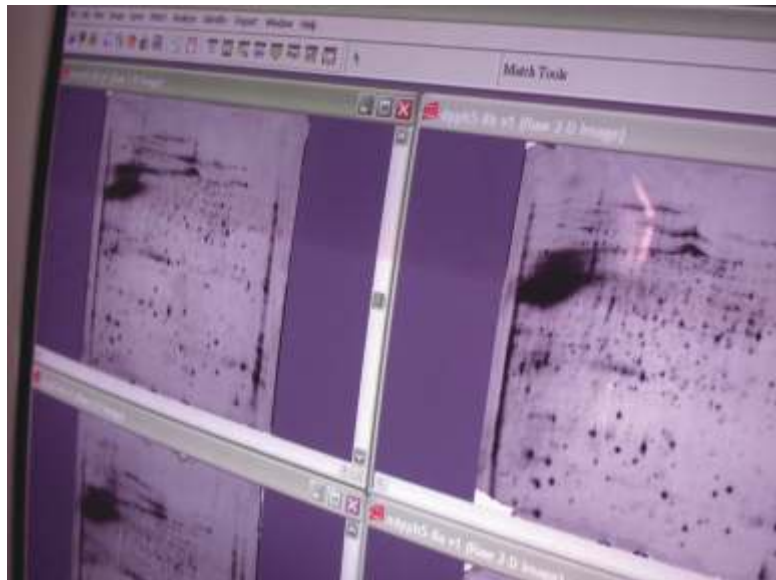
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The Laboratory of Fish Biology was established in the main campus of Universiti Sains Malaysia, Penang in 2001. Nutritional aspects of several ornamental freshwater species such as discus, fighting fish and livebearers are studied in the laboratory. It also provides facilities to support zebrafish culture and breeding.

Work from this laboratory has resulted in numerous papers dealing with ornamental fish nutrition in leading journals such as *Aquaculture*, *Aquaculture Research* and *Aquaculture Nutrition*. Realizing that biotechnology promises exciting discoveries and support from important funding agencies, the laboratory started emphasizing the use of molecular tools to interpret our findings at the genomic biochemical and cellular levels from 2003 onwards. Funding from sources such as the Malaysian Ministry of Science and Technology, Malaysian Ministry of Education, Toray Scientific Foundation, Malaysian Academy of Sciences and IFS Sweden, have supported this new area of thrust. Currently, the laboratory is using zebrafish to understand the influence of dietary fatty acids on the reproductive performance and larval quality. The availability of zebrafish desaturases and elongases genes sequences, coupled with several other immune-related genes is expected to help the researchers investigate the utilization and distribution of fatty acids during active reproduction stages. Besides zebrafish, the laboratory is also looking into the broodstock nutrition of freshwater live bearer species such as guppy and swordtail.



The laboratory is pursuing the study of organogenesis in zebrafish and its relevance in larviculture. Ontogenic mapping of organ maturation is important in larviculture as most fish larvae have immature and undeveloped organs at hatch. The researchers are currently focusing on the interrenal gland, which is crucial in mediating stress in fish. They have cloned several genes that may play a role in interrenal development and are currently testing these genes out to confirm their validity as suitable marker for interrenal development.

Another interesting on-going project is the mapping of the mucus proteome from discus fish utilizing proteomics platform. Findings from this study are expected to yield important information on the control and secretion mechanisms of vital proteins in fish mucus.

The laboratory expects the next two years to be exciting in terms of research progress. Ties with leading institutes in molecular biology such as the National University of Singapore are being strengthened in order to enable the lab to embark on more research projects in molecular biology relevant to aquaculture. It is also in the midst of securing research collaborations with other institutions such as Nagasaki State University and Department of Fisheries, Western Australia.

The laboratory is ably supported by 11 post graduate students from Malaysia, Indonesia, India and Yemen. ■

Dr Alexander Chong is currently serving as a Senior Lecturer in Universiti Sains of Malaysia. He joined the university in 2001 upon completion of his Doctorate in the same faculty in 2000. His main interests are molecular reproduction and development. He actively conducts research in fish nutrition, especially on ornamental species.

