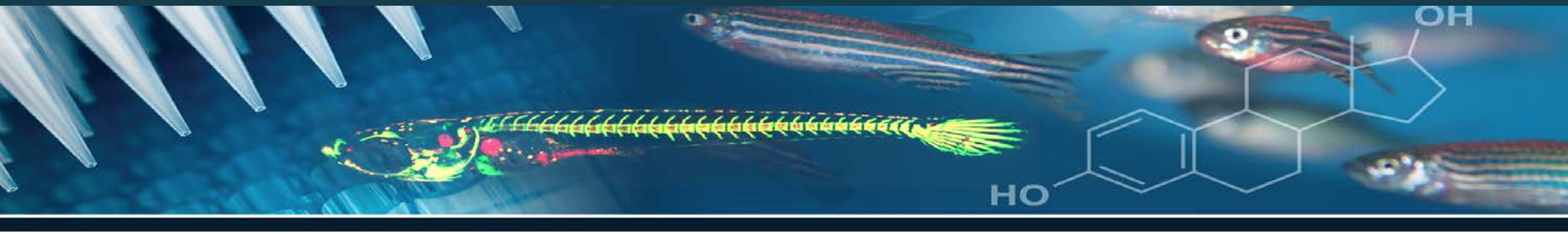
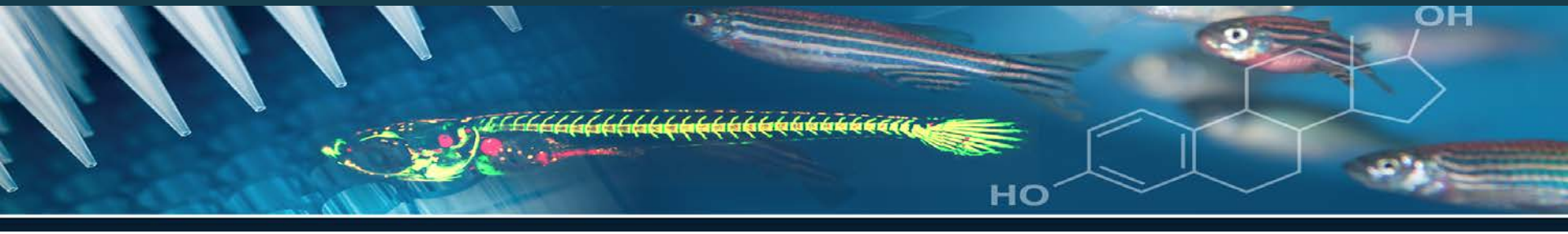


Aquatic Models and 21st Century Toxicology

Dr. Jon Hamm
NICEATM

NIH National Institute of Environmental Health Sciences
NC STATE UNIVERSITY



Aquatic Workshop Overview

- The objectives of the workshop included:
  - Raise awareness within the toxicology field of the advantages of using aquatic model resources
  - Develop a framework to assist in integrating toxicology data from aquatic models with ongoing in silico, in vitro and in vivo testing initiatives.
- Co-sponsored by North Carolina State University and NIEHS
- Held May 5th and 6th, 2014 at the James B Hunt, Jr. Library on North Carolina State's Centennial Campus.
- Included nearly 150 participants from the U.S., Canada, Europe, and Asia.

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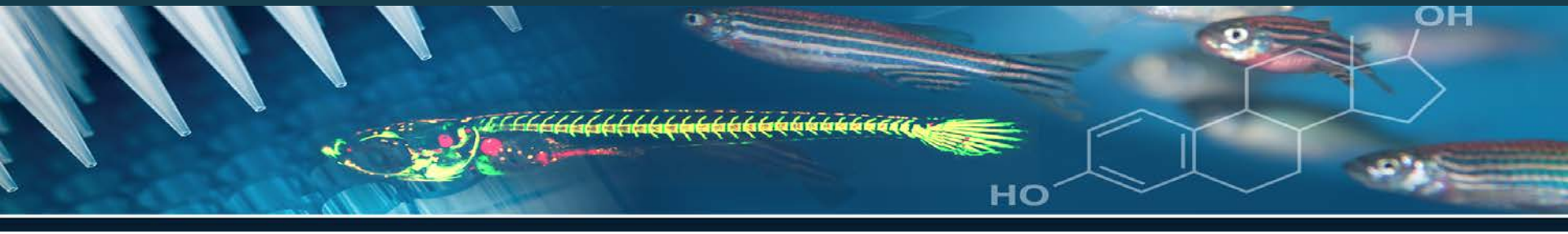
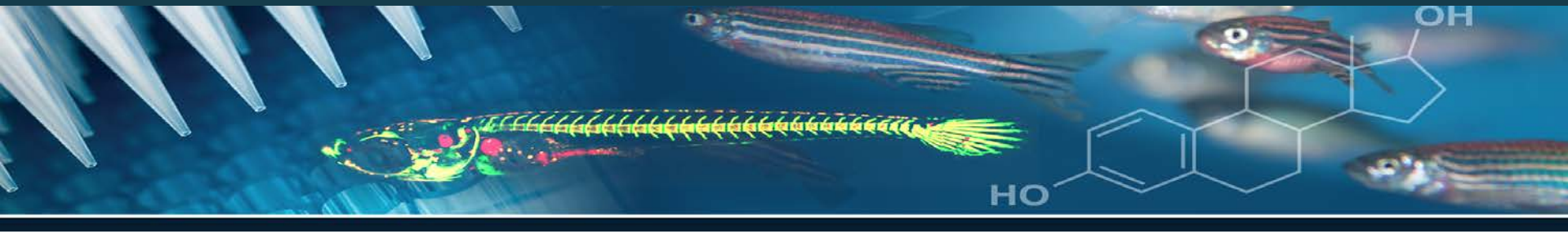


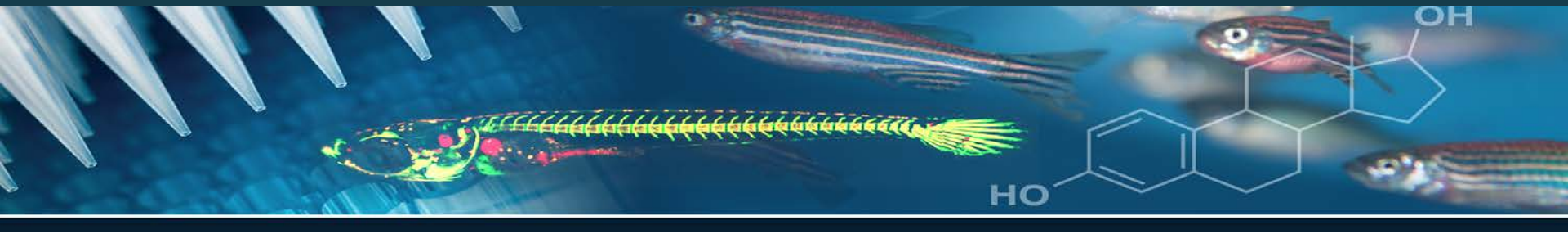
Aquatic Workshop Rationale

- Aquatic vertebrate models offer advantages of:
  - Utility in screening – small size, high fecundity, rapid development
  - Eluetheroembryos reduce animal welfare concerns
  - ≈ 85% homology for disease-associated genes between humans and zebrafish
- Despite these advantages aquatic models remain modest contributors to understanding the effects of exposure on our health



Aquatic Workshop Sessions

- Featured an opening session on the regulatory perspective on the use of aquatic vertebrate models
- Six plenary sessions:
  - Cardiovascular Toxicology
  - Developmental Processes in Toxicology and Disease
  - Emerging Technologies
  - Models of Neurobehavior and Neurotoxicology
  - Predicting Alterations to the Immune System
  - Emerging Issues



Workshop Outcomes

- Preparation of a workshop summary report for publication in the peer-reviewed literature.
- Discussion of follow-up workshops on the use of aquatic vertebrate species.
  - NIEHS' Predictive Toxicology and Disease held a two day meeting to discuss the use of zebrafish models
- Establishment of collaborations with researchers employing aquatic vertebrate species.
  - Presentations to NTP by Drs. Volz and Levine on zebrafish models