Fish model species in environmental toxicology

CHAIRS: Jessica Legradi, Juliette Legler, Charles Tyler

Tuesday 13th May 2014, 08:10 – 16:00, room: Sydney

Fish models are used commonly in ecotoxicity testing to investigate the impact of chemicals on the aquatic environment. A range of OECD guidelines are available, which use different fish species and target different toxicological endpoints. These studies however are limited to relatively few species, and fish offer far greater utility for research, spanning basic developmental biology and neurobiology to immunology. The small size of commonly used fish species including the zebrafish (Danio rerio) or medaka (Oryzias latipes) and their robust nature makes them ideally suited for application in automated high throughput screens. Furthermore, early life stages of these species offer all the key attributes of a complex in vivo system (e.g. including metabolism), as well as attributes of in vitro assays, as tests can be carried out in multiwell plates formats with small sample volumes and run in comparatively short periods of time. These attributes make them well suited for ecotox testing of environmental extracts and effect directed analysis (EDA) to detect contaminants in environmental samples. Research on fish over the last decade has been greatly facilitated by the availability of sequenced genomes, which are available for over nine species with more pending. This facility together with advances in genetic and epigenetic studies, including gene knockout and transgenesis technologies, is greatly facilitating understanding of the molecular mechanisms of toxicology. Within this session we intend to show recent developments in toxicological research using fish as model species, focusing on novel systems, endpoints, assays and testing strategies especially as applied to ecotoxicology. We especially invite presentations focusing on molecular approaches and behavioral endpoints. The session will consider effects on individual fish, multigenerational exposure effects, and population level impacts. It will be interdisciplinary and bring together researchers across a wide range of research areas with the view to enhance approaches in ecotoxicity testing.

SESSION TYPE: Platform, Poster Spotlight and Poster