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Applications and future directions in invertebrate and fish cell culture

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This collection of papers results from the 12th International Conference on Invertebrate and Fish Cell Culture, which took place concurrently with the 2008 World Congress on In Vitro Biology in Tucson, Arizona from June 14 to 18, 2008. The World Congress drew a total of 251 abstracts, including 54 oral presentations as well as numerous poster presentations. Attendees (342 in total) included many undergraduate and graduate students, postdoctoral associates, and junior and senior scientists, encouraging interaction at all levels. As part of this stimulating atmosphere, the 12th International Conference on Invertebrate and Fish Cell Culture offered six oral presentations covering two topics: "Cell Interactions and Signal Mechanisms" and "Fish and Amphibian Cells in Ecotoxicological Research". Additionally, a round-table discussion encouraging lively discussion on the state of our field was also convened. Lastly, a joint session with the SIVB Animal Section included three presentations on "Virus-Cell Interactions in Vertebrate and Invertebrate Systems".

In the first symposium, three excellent presentations were given on "Prostaglandin Actions in an Established Insect Cell Line" by Dr. David Stanley (USDA/ARS/BCIRL, Columbia, MO), "Signaling Interactions Between Olfactory Receptor Axons and Glial Cells in the Axon Sorting Zone of the Developing Moth Olfactory Pathway" by Dr. Lynne A. Oland (University of Arizona, AZ, USA), and "Intercellular Signaling Regulates Heart Development in *Drosophila*" by Dr. Stuart J. Newfeld (Arizona State University, AZ).

The second symposium began with a presentation on "Applications and Potential Uses of Rtgill-W1, a Cell Line Derived from Gills of Rainbow Trout" by Dr. Lucilia E. J. Lee (Wilfrid Laurier University, ON, Canada), followed by "Unique Cell Characteristics for the Development of a Portable Cell-based Toxicity Sensor for Drinking Water Protection" by Dr. Mark W. Widder (US Army Center for Environmental Health Research, Fort Detrick, MD), and ended with "Evaluation of EP-1, a Cell Line from *Anguilla japonica*, to Study the Life Cycle of the Microsporidian *Heterosporis anguillarum*" by Mrs. S.R. Monaghan (University of Waterloo, ON, Canada).

The objectives of the round-table discussion were to assess the current and prospective uses for invertebrate and fish cell and tissue cultures, as well as to discuss their limitations and strengths. The topics included physiological investigations, the proliferation and study of pathogens, detection of environmental toxins, and the elucidation of toxin mechanism(s) of action. Additionally, the joint symposium on virus–cell interactions included a presentation by Dr. Suzanne M. Thiem (Michigan State University) on "Baculovirus Genes Affecting Host Functions", one by Dr. Brenda G. Hogue (Arizona State University) on "Coronavirus Assembly at Internal Cellular Membranes", and one by Dr. William T. Gerthoffer (University of South Alabama) on "Viral Gene Transfer Vectors in Studies of Human Smooth Muscle Function".

During our conference, we also had a special opportunity to honor Dr. Arthur McIntosh for his nearly 40 yr of research in insect cell culture and pathology with the 2008 SIVB Fellow Award. As a pioneer in insect cell culture, his

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contributions include the discovery and characterization of novel insect viruses (including biosafety aspects), the establishment and characterization of numerous insect cell lines (including the first heliothine cell lines), and the development of a unique cell culture medium.

This special collection of papers includes two reviews, one paper on insect/invertebrate cell cultures and their applications to research and pest management and a second on fish gill cell cultures of RTgill-W1 and their applications and potential uses. Additionally, three research papers have been included entitled "Primary Culture of Insect Midgut Cells" by Hakim et al., "Baculovirus Genes Affecting Host Function" by Thiem, and "Use of Fish Cell Cultures to Study Microsporidia" by Monaghan et al.

Dr. Arthur McIntosh and his wife, Mrs. Danielle McIntosh, receiving the SIVB Fellow Award.

Conference participants visiting the Arizona-Sorona Desert Museum (front row from left): Guido Caputo, Art McIntosh, Guy Smagghe, Amy Wang; (top row from left): Cindy Goodman, Danielle McIntosh, Suzanne Thiem, museum guide, Ray Hakim.

In summary, we are very pleased to have the opportunity to publish these timely manuscripts in *In Vitro Cellular and Developmental Biology—Animal* as we believe that they will be important additions to the cell culture literature. We also appreciate having the opportunity to help organize and participate in the 12th International Conference on Invertebrate and Fish Cell Culture, held in the beautiful environment of the Tucson desert that included Saguaro cacti and other succulents—as showcased by the Arizona-Sorona Desert Museum.