Nordic Zebrafish Meeting 2024

From husbandry to animal experiments: Creating reliable research

13th – 15th November 2024

Elite Hotel Carolina Tower, Stockholm, Sweden

Day 1 – 13th November	
17:30	**Tour of the zebrafish core facility at KI**
19:00	**Meet and Greet at Elite Hotel Carolina Tower**

Day 2 – 14th November			
	08:00 - 09:00	**Coffee and registration**	
	09:00 - 09:15	**Welcome and Introductions**	
Session 1	**09:15 – 10:00**	**Gregory Paull**	**Harmonizing Research for the 3Rs: Tailoring zebrafish husbandry for their purposed research**
	10:00 – 10:15	**Scanbur**	Sponsor Talk
	10:15 – 10:30	Petronella Kettunen	Packing and transport of adult zebrafish cause both acute and long-term elevated water cortisol levels
	10:30 – 10:45	Steffen Keiter	Transgenerational epigenetic inheritance of neurobehavioral alterations in zebrafish caused by environmental pollution
	10:45 – 11:00	Nils Dennhag	fhl2b mediates extraocular muscle protection in zebrafish models of muscular dystrophies and its ectopic expression ameliorates affected body muscles
	11:00 – 11:15	Peter Larsson	Zebrafish as a Long QT Syndrome model for drug screening
	11:15 – 13:00	**Lunch mingle and poster session in room Alexander Fleming**	
Session 2	**13:00 – 13:45**	**Steven Renshaw**	**Zebrafish models of innate immunity**
	13:45 – 14:00	Meri Uusi-Mäkelä	The inflammasome adaptor pycard is essential for immunity against Mycobacterium marinum infection in adult zebrafish
	14:00 – 14:15	Louise von Gersdorff Jørgensen & Yajjiao Duan	How to adapt imaging to your needs. Imaging techniques for two distinct host-parasite systems in zebrafish
	14:15 – 14:30	Suresh Jesuthasan	Solitary chemosensory cells in zebrafish skin: Evidence for a role in host-microbiota interactions
	14:30 – 14:45	**IDEXX**	Designing a Health Monitoring program for zebrafish
	14:45 – 15:30	**Coffee mingle and poster session in room Alexander Fleming**	

	15:30 – 16:15	**Simon Mackenzie**	**Thermal choice and fever in fish**
Workshops	**16:15 – 18:00**	**Husbandry** *Gregory Paull*	Room "Alexander Fleming"
		Immunology *Simon MacKenzie*	Room "Röntgen"
		Imaging *Stephen Renshaw*	Room "Ivan Pavlov"
	18:30	**Dinner at the conference hotel**	

Day 3 – 15th November			
Session 3	**08:30 – 09:00**	Lasse Jensen	Zebrafish as a cancer model
	09:00 – 09:15	Kristina Ihrmark Lundberg	Investigating the role of MYCN in neural crest cells
	09:15 – 09:30	Niek van Bree	Development of an orthotopic medulloblastoma zebrafish model for rapid drug testing
	09:30 – 10:00	**Coffee mingle and poster session in room Alexander Fleming**	
	10:00 – 10:45	**Natasha Karp**	**The sex inclusive research framework**
	10:45 – 11:00	Ilkka Paatero	Zebrafish models for cardiovascular biology
	11:00 – 11:15	Pavitra Kannan	A deep learning method to quantify intersegmental vessels in zebrafish embryos
	11:15 – 11:30	Alexandra Abramsson	Ependymal status and CSF flow in health and disease
	11:30 – 11:45	Noora Nevela	Phagocytosis of photoreceptor outer segments by retinal pigment epithelium imaged in living zebrafish
	11:45 – 12:00	**The Nordic Zebrafish Network and closing remarks**	
	12:00 – 13:00	**Lunch mingle**	

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Our key-note speakers

Natasha Karp

Natasha is a Director of Hit Discovery and Biostatistics within AstraZeneca leading a team of statisticians and bioinformaticians supporting preclinical research. In addition, Natasha is an active researcher publishing papers with a focus on the challenges within preclinical research with a particular interest in improving replicability, reproducibility, and generalizability of the studies. In recent years, the research has focused on meta-research exploring how to enable and nudge scientists into better research practice.

In my seminar, I will present a new, interactive sex inclusive research framework (SIRF) which supports the evaluation of in vivo and ex vivo research proposals from a sex inclusive research perspective. The framework delivers a traffic light classification, indicating whether a proposal is appropriate, risky, or insufficient with regards to sex inclusion. This tool is designed for use by researchers, (animal) ethical review boards, and funders to generate a rigorous and reproducible assessment of sex inclusion at the proposal level, thus helping address the embedded sex bias in preclinical research.

Simon MacKenzie

Professor Simon MacKenzie is the Head of the Institute of Aquaculture at the University of Stirling, Scotland. He runs an active and vibrant multi-disciplinary research team engaged in different aspects of immunity, physiology, ecology and disease in fish with an underpinning focus upon molecular regulation. He has spent the past 20 years mainly working upon experimental models relevant to fish health with a particular emphasis upon the evolution of the immune system and health and welfare in aquaculture. Recent work focuses upon gill microbiomes and fish husbandry management, the molecular regulation of smoltification and insect meals as immunomodulators in fish. Currently, Professor MacKenzie is the co-Editor in Chief of Frontiers in Aquaculture a new journal in the aquaculture sphere.

In my talk I will explore the impact of thermal choice upon the behavior of fish highlighting how the immune response is regulated through the fever response. We will discuss how temperature choice has wide-ranging effects upon regulatory systems in fish and how this impacts their welfare.

Stephen Renshaw

Steve Renshaw is the Sir Arthur Hall Professor of Medicine at the University of Sheffield and Head of the Division of Clinical Medicine. He studied medicine at Cambridge and then at Oxford Clinical School. He has been a Wellcome Trust Clinical Training Fellow, an MRC Clinician Scientist Fellow, an MRC Senior Clinical Fellow and an MRC Programme Grant holder. His lab focusses on the biology of innate immune cells, particularly the neutrophil, and their relevance to respiratory disease. His major contribution has been the development of the transparent, genetically-tractable larval zebrafish as a model for the study of innate immunity in vivo. He has developed several unique transgenic zebrafish which have allowed several important advances in our understanding of inflammation biology and of host-pathogen interaction. He continues clinical work in Respiratory Medicine with a special interest in Interstitial Lung Disease associated with a range of multisystem diseases.

Neutrophilic inflammation underpins most of the diseases of ageing which are the scourge of health systems around the world, including common and incurable lung diseases. Despite this, the neutrophil is the target of virtually no therapies, in part due to the intractability of human neutrophils. Inspired to address this gap, we generated a transgenic zebrafish model to aid the study of neutrophil function in vivo, which has proved highly useful for a range of applications. I will discuss some of these in my talk, including identification of new classes of pro-resolution therapeutic with unexpected targets and new understanding of the mechanics of phagocytosis and bacterial killing.

Gregory Paull

Gregory Paull is the manager of the Aquatic Resources Centre, a large interdisciplinary research facility which supports over 100 scientists whose studies span environmental and human health, aquaculture and understanding biological systems. Greg has worked at the University of Exeter, UK for over 20 years where he also obtained his PhD in fish reproductive biology and eco-toxicology, with zebrafish as one of his key study species. Greg has had the fortune to study zebrafish in their natural environment and champions understanding of their natural history to support in-laboratory husbandry, care and welfare. Greg is also a Named Animal Care and Welfare Officer.

Zebrafish are often described as an easy to keep species, however this is far from being the case when keeping this species in the laboratory for different and diverse research purposes and needs. In my talk, I will describe the various challenges faced for the application of zebrafish in a number of key research areas. I will then illustrate how the lack of standardisation of husbandry practices/approaches in the zebrafish research community is contributing to uncertainties in research data and in some cases contributing to poor experimental reproducibility. I will call on the ‘zebrafish community’ to help develop current husbandry practices, which are often in the most basic form, to better suit their research use and the animal’s welfare. Finally, I will discuss some ideas/concepts and identify existing expertise to help achieve practical developments in zebrafish husbandry that better align with their research use.