

Genome editing in zebrafish: knock-ins and their applications

August 18-20, 2025, Vilnius University Life Sciences Center

August 18

17:00 - 18:00	Registration and Welcome reception	
18:00 - 18:30	Advances in epitope tagging in zebrafish Darius Balčiūnas, Temple University / Vilnius University	Plenary Lecture
18:30 - 19:00	Tissue-resident macrophages in cardiac regeneration Ben Shih-Lei Lai, Academia Sinica	Plenary Lecture
19:00 - 20:00	Gene Processing using DonorGuide, GeneWeld and MitoFUSX Base Editors Stephen Ekker, Dell School of Medicine University of Texas at Austin	Keynote Lecture (remote)

August 19

10:00 - 11:00	Oligonucleotide-mediated homology directed repair Darius Balčiūnas, Thomas Juan	Practical Workshop I
11:00 - 12:00	Targeted integration of large transgenes Ben Shih-Lei Lai, Khai-Lone Lim, Thomas Juan	Practical Workshop II
12:00 - 13:15	Lunch	
13:15 - 13:50	High-Efficiency TadA Cytosine Base Editors for Precise Genetic Variant Modeling Gaurav Varshney, Oklahoma Medical Research Foundation	Plenary Lecture
13:50 - 14:25	CRISPR prime Editing made precise by inhibition of microhomology-mediated end-joining Filippo Del Bene, Institut de la Vision	Plenary Lecture
14:25 - 15:00	Approaches to knock out and knock down function of endogenous genes Thomas Juan, Uppsala University	Plenary Lecture
15:00 - 16:00	Zebrafish as a model to decipher the role of tbc1d24 gene in the development of autosomal dominant hearing loss Anna Sarosiak, Medical University of Warsaw Leveraging CRISPR integration to build intercellular signaling sensors Emma Spikol, Chan Zuckerberg Biohub Collagen 6 as a potential regulator of heart regeneration Florian Constanty, Heidelberg University Interaction of Zebrafish cardiac matrix-bound vesicles with human cardiac cells Remya Kommeri, Trinity College Dublin Using Bxb1 and mini-circles to knock in tension sensors into cdh5 and cdh2 Stone Elworthy, University of Sheffield	Short Plenary Presentations
16:00 - 18:00	Poster Session and Coffee Break	
18:00 - 19:00	Transcriptional Adaptation, an RNA-based mechanism of genetic compensation Didier Stainier, Max Planck Institute for Heart and Lung Research	Keynote Lecture
19:00 - 19:30	Travel to dinner (self)	
19:30 -	Conference Dinner (3 Mūzos, Gedimino pr. 4)	

August 20

10:00 - 11:00	Conditional gene inactivation using CreERT2 Miglė Kalvaitytė-Repečė, Edita Bakūnaitė and Florian Constanty	Practical Workshop III
11:00 - 12:00	Bring your favorite gene to brainstorm Panel of speakers	Practical Workshop IV
12:00 - 12:05	Concluding Remarks Darius Balčiūnas and Ben Shih-Lei Lai	

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Vilnius University



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Poster Session

#	Presenter	Title	Organization
1	Ana Raquel Tomás	Design and establishment of a CRISPR-mediated Knock-In Tool for Zebrafish	Champalimaud Foundation
2	Anna Sarosiak	Zebrafish as a model to decipher the role of tbc1d24 gene in the development of autosomal dominant hearing loss	Institute of Physiology and Pathology of Hearing
3	Bartosz Michno	Pneumolysin-dependent and independent non-canonical autophagy processes mediate host defense against pneumococcal infection	Jagiellonian University, Faculty of Biology, Department of Evolutionary Immunology
4	Chieh-Ju Wang	The role of Timp4.3+ cardiac resident macrophage in zebrafish heart regeneration	Institute of Biomedical Sciences, Academia Sinica
5	Edita Bakūnaitė	Highly efficient tamoxifen-inducible Cre recombination in embryonic, larval and adult zebrafish	Vilnius University Life Sciences Center
6	Stone Elworthy	using Bxb1 and mini-circles to knockin tension sensors into cdh5 and cdh2	University of Sheffield
7	Emma Spikol	Leveraging CRISPR integration to build intercellular signaling sensors	Chan Zuckerberg Biohub
8	I-Ting Lin	Establishing a cardiac resident macrophage lineage tracing line and deciphering the function of macrophages during zebrafish heart regeneration	Institute of Biomedical Sciences, Academia Sinica
9	Jaroslav Denkovskij	Precision genome editing to model human pathogenic CACNA1c mutations in zebrafish Danio rerio	Vilnius University Life Sciences Center
10	Joana Monteiro	Designing CRISPR-mediated Knock-In Tools for Zebrafish	Champalimaud Foundation
11	Julia Kasperek	Zebrafish muscle glycogen phosphorylase (Pygm) knockout: A new animal model of human McArdle disease	University of Wrocław
12	Ke-Hsuan, Wei	Comparative single-cell profiling reveals distinct cardiac resident macrophages essential for zebrafish heart regeneration	Institute of Biomedical Sciences, Academia Sinica
13	Khai Lone Lim	The regulatory role of ifng1 in Zebrafish Heart Regeneration	Institute of Biomedical Sciences, Academia Sinica
14	Kotryna Paulikaitė	Evaluation of precise genome editing efficiency in reporter Danio rerio lines	Vilnius University Life Sciences Center
15	Luca Kamilla Li	Establishment of a transgenic zebrafish line for allele-specific genomic integration to study Pseudoxanthoma elasticum and its putative genetic modifiers	Eötvös Loránd University, Department of Genetics
16	Miglė Kalvaitytė-Repečké	The role of Tcf21 in heart regeneration	Vilnius University Life Sciences Center
17	Niedharsan Pooranachandran	Antiviral Function of the non-RLR DexD/H-box RNA helicase DDX1 in Zebrafish	Institute of Zoology and Biomedical Research
18	Paulina Misiak	Assessment of chemotherapy-inflicted cardiotoxicity and endothelial dysfunction in the zebrafish model	Jagiellonian University, Jagiellonian Centre for Experimental Therapeutics (JCET)
19	Rimvydė Čepaitė	Structural variation of type IV-A CRISPR-Cas	Vilnius University U EMBL Partnership Institute
20	Sergej Šemčuk	Ecotoxicological assessment of nano-magnetite-chitosan composites in wild-type Danio rerio	State Scientific Research Institute Nature Research Centre
21	Shivani Dogra	Mechanistic Insights into How Maternal Infection-Related Environmental Factors Influence Neurodevelopment	IMol Polish Academy of Sciences
22	Thomas Legier	Increasing β -cells function and survival through reducing ER stress: a high throughput in vivo screening strategy	BMC - Uppsala University
23	Tomasz Dulski	Rac1 contribution to brain connectivity impairments and neuropsychiatric disorders in Tuberous Sclerosis Complex	The International Institute of Molecular Mechanisms and Machines Polish Academy of Sciences (IMOL PAS)