



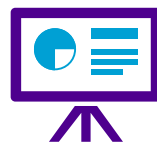
**MET Research Day  
25-26 Nov 2021  
Final Programme**

## PROGRAMME CONTAINS



### KEYNOTE SPEAKERS

Olli Lohi, Dan Peer, and Blanca Rodriguez



### PRESENTATIONS

MET research presentations, chosen from the abstracts



### PITCHING

MET research pitches, chosen from the abstracts



### SPEED NETWORKING

Meet colleagues and find new connections on Zoom



# Thursday 25 November 2021

08:30 Opening words, Dean Tapio Visakorpi & Provost Jarmo Takala

08:45 Session 1, chair Hannele Laivuori

**08:45 Keynote: Research Director Olli Lohi**  
**Tampere Center for Child, Adolescent and Maternal Health Research**  
**“Genomics and targeted therapy of childhood leukemia”**

09:30 MET research presentations (à 10 min)

1. Emma Raitoharju: Impact of Parental Exposures on Offspring's epigenetic profiles and later life health
2. Mari Archer: Low-grade inflammation in depressed patients and the effect of alcohol
3. Valeriia Dotsenko: Transglutaminase 2 (TG2) inhibitor protects gluten-induced intestinal damage in celiac disease: transcriptomic analysis of a randomized gluten challenge study
4. Toini Pemmari: Bilberry (*Vaccinium myrtillus* L.) Alleviates Inflammation and Adverse Metabolic Effects Caused by High-Fat Diet in a Mouse Model
5. Mirja Niskanen: Studying mycobacterial genes expressed in reactivation

10:20 Break

10:30 Session 2, chairs Jari Hyttinen & Michelangelo Paci

**10:30 Keynote: Professor of Computational Medicine Blanca Rodriguez**  
**University of Oxford**  
**“Towards Precision Cardiology with In Silico Clinical Trials and Digital Twins”**

11:15 MET research presentations (à 10 min)

1. Alpo Värri: Health app quality evaluation technical specification ISO 82304-2
2. Tunc Asuroglu: Lactate Trend Prediction in Intensive Care Unit: An Artificial Intelligence Approach
3. Kaisa Tornberg: Organ-on-chip device for compartmentalized and acute hypoxia
4. Heidi Peussa: Light-controllable platform to study fast mechanical signals
5. Tomi Rynnänen: Past, Present and Future Advances in Microelectrode Array (MEA) Research

12:05 Closing words by the Vice Dean Pasi Kallio

12:30 SPEED NETWORKING Sessions on Zoom (ends at 13:30)

Short research presentations and rotating group discussions for those who registered separately

Friday's programme >>

# Friday 26 November 2021

08:30 Opening words, Vice Dean Pasi Kallio

08:45 Session 3, chair Oommen P. Oommen

**08:45 Keynote: Professor of Precision NanoMedicine Dan Peer  
Tel Aviv University  
“The RNA Revolution: from Vaccines to Genome Editing”**

09:30 MET Highlight talk, Howy Jacobs: “Benefits and costs of the Alternative Oxidase”

09:40 MET research presentations (à 10 min)

1. Minna-Liisa Änkö: Functional RNAomics uncovers mechanisms of human disease (video)
2. Markus Ojanen: Bacteria-specific norovirus-like particle conjugate vaccine in prevention of cardiovascular diseases
3. Laura Vesala: Mild mitochondrial perturbations enhance cell-mediated innate immunity in *Drosophila*
4. Rolle Rahikainen: Identifying mechanoregulated protein interactions using a novel in vitro protein stretching method
5. Tarja Toimela: GLP standardisation and test method validation at FHAIVE

10:30 Break

10:45 MET Research Pitches (à 2 min + 5 min discussion)

**10:45 Pitching session 1**

## Room 1: Cancer 1

Merja Helenius, FICAN Mid the regional cancer center  
“FICAN Mid cancer center provides support for cancer researchers”

Sinja Taavitsainen, Computational Biology  
“Subclone eradication analysis identifies targets for enhanced cancer therapy ‘ and reveals L1 retrotransposition as a dynamic source of heterogeneity”

Aliisa Tiihonen, Cancer Regulation and Immunology  
“Multiplex IHC for spatial characterization of tumor microenvironment”

Arjen Gebraad, Adult Stem Cell Group  
“Growth response and differentiation of bone marrow-derived mesenchymal stem/stromal cells in presence of novel multiple myeloma drug melflufen”

Konsta Kukkonen, MBPCG  
“Cell type specific responses to DHT in non-malignant RWPE-1-AR and LNCaP cells”

## Room 2: Neuroscience 1

Marja-Leena Linne, Computational Neuroscience Group  
“Computational Neuroscience Research Group: Research topics, Projects and Contributions to Global Digital Neuroscience Infrastructures”

Oskari Kuluta, NeuroGroup  
“Analyzing axonal growth with physical and chemical cues on microfluidic devices”

Annika Ahtiainen, Computational Biophysics and Imaging Group

“Astrocyte role under chemically-induced seizures in neuron-astrocyte co-cultures”

Stefanus Wirdatmadja, Wireless Identification and Sensing Systems Research Group

“DopamineSense: a wireless real-time biosensor system for Parkinson's Disease monitoring”

lisa Tujula, Neuro Group

“Axons on chip model for studying the spread of aggregated  $\alpha$ -synuclein and its effects on neuronal functionality”

Lassi Sukki, Micro- and Nanosystems Research Group

“Development and adoption of novel fabrication methods for cell culture device fabrication”

### Room 3: Cardio vascular diseases 1

Martta Häkli, Heart group

“Modeling acute cardiac ischemia-reperfusion using human induced pluripotent stem cell-derived cardiomyocytes”

Marten Szibor, Howylab

“Signals emanating from the mitochondrial respiratory chain impact on adaptive remodeling of the mouse post-ischemic heart”

Sanna Koskimäki, Adult stem cell group, Heart group

“3D cardiovascular model for myocardial ischemia”

Joona Valtonen, Heart Group

“The Junctophilin-2 mutation (Thr161Lys) associated with hypertrophic cardiomyopathy using patient-specific iPS cardiomyocytes demonstrate the mutation-specific phenotype”

Milad Mosallaei

“Encapsulation of piezoelectric cantilever sensor improves its stability in engineered cardiac tissue contraction force measurements”

### Room 4: Biomaterials

Audrey Deraine Coquen, BioMediTech

“Polymer-based honeycomb membrane on bioactive glass as an innovative biphasic scaffold for bone tissue engineering”

Vigneshkumar Rangasami

“Immunomodulatory designer hydrogels: GalloI functionalized hyaluronic acid hydrogel suppresses inflammation and polarizes macrophages to immunosuppressive phenotype”

Jenni Leppiniemi, Protein Dynamics

“Avidin-conjugated Nanofibrillar Cellulose Hydrogel Functionalized with Biotinylated Fibronectin and Vitronectin Promotes 3D Culture of Fibroblasts”

Virginia Alessandra Gobbo, Bioactive Glasses Group

“Protein adsorption on bioactive glasses and characterization”

Ali Zarei, Micro- and Nanosystems Research Group

“Micro-robotics and micro-fibril angle measurement for bio-based fibers characterization”

### Room 5: Bioimaging

Nicole Anderton, Ultrasound group

“Using ultrasound to disrupt microscopic particles”

Mari Lehti-Polojärvi, Computational biophysics and imaging group

“Multimodal imaging of 3D cell and tissue cultures”

Bobin George Abraham, Cellular Biophysics

“Nanobody based strain sensor for studying nuclear mechanics”

Nemanja Milicevic, Biophysics of the eye

“The potential reciprocal relationship between the circadian clock and tight junctions in epithelial cells”

Ella Lampela, Adult Stem Cell Group

“Optimizing an image-based quantification for 3D in vitro vascular networks”

Antti-Juhana Mäki, Micro- and Nanosystems Research Group

“Image-based fluid flow estimation from in vitro 3D cell cultures”



## Room 6: Immunology and virology

Tiina Lehtola, The Immunopharmacology Research Group

“Dexamethasone attenuates MMP-13 expression through MKP-1 in chondrocytes”

Giusy del Giudice, Finnish Hub for Development and Validation of Integrated Approaches

“Identification of a conserved regulatory response to nanomaterials highlights their immunomodulating properties”

Konsta Kivimäki, The Immunopharmacology Research Group

“Pinosylin shifts macrophage polarization to support resolution of inflammation”

Matthew Maasdorp, Experimental Immunology

“Proteasome  $\alpha 6$  subunit negatively regulates the JAK/STAT pathway and blood cell activation in *Drosophila melanogaster*”

Amirbabak Sioofy-Khojine, Virology

“Antiviral strategies to treat enterovirus infections in cell models”

Elina Nummenmaa, The Immunopharmacology Research Group

“TRPA1 as a factor in osteoarthritis: TRPA1 (transient receptor potential ankyrin 1) mediates fibroblast growth factor-2 expression in chondrocytes”

11:30 Break, 10 min

11:40 MET Research Pitches (à 2 min + 5 min discussion)

11:40 Pitching session 2

## Room 7: Cancer 2

Alejandra Rodriguez Martinez, Cancer Regulation and Immunology

“Informative genomic regions for CNS tumor classification based on DNA methylation data”

Serafiina Jaatinen, Computational Biology

“PTPRD and CNTNAP2 as markers of tumor aggressiveness in oligodendrogliomas”

Sonja Mäntylä, Cancer Regulation and Immunology

“FGFR3-TACC3 fusion protein drives migration, lower differentiation state, and enhanced calcium signaling response in glioblastoma”

Annika Kohvakka, Molecular Biology of Prostate Cancer

“AR and ERG Drive the Expression of Prostate Cancer Specific Long Noncoding RNAs”

Elaheh Moradi, Computational Biology

“Supervised pathway analysis of gene expression data for survival time prediction in glioblastoma”

Gunilla Högnäs, PELICAN Personalized Cancer Medicine

“Combined longitudinal clinical and autopsy phenomic assessment in lethal metastatic prostate cancer: recommendations for advancing precision medicine”

## Room 8: Neuroscience 2

Venla Harju, Neuro Group

“Modelling stroke in 3D neuronal networks in vitro”

Jarno Tanskanen, Computational Biophysics and Imaging Group

“Epilepsy Technology Development: Hybrid Enhanced Regenerative Medicine Systems (HERMES) – An EU FET Proactive Project”

Johanna Lotila, NeuroGroup

“Generation of multiple sclerosis patient derived induced pluripotent stem cell lines”

Laura Keto, Computational Neuroscience Group

“Morphologically-detailed reconstruction and simulation of cerebellar glial cell model”

Nikta Pournoori, WISE Research Group

“Compact Quad-Band Meandered Implantable PIFA for Wireless Brain Care”

Ropafadzo Mzezewa, Neuro group

“A kainic acid -induced seizure model in human pluripotent stem cell derived cortical neurons for studying the role of IL-6 in the functional activity”

### Room 9: Lung and respiratory

Jasmin Honkamäki, FinEsS

“Asthma healing in relation to age at asthma diagnosis and gender in a population-based study”

Antti Kallonen, DSH

“ENVISION - AI driven prognostic and diagnostic system to improve treatment of COVID-19 patients in the intensive care units”

Milka Hammarén, Infection Biology

“Antibiotic tolerance in the adult zebrafish model of tuberculosis”

Anni Saralahti, Experimental immunology

“Identification of genetic risk factors for severe pneumococcal infection in zebrafish”

Samu Luostarinen, The Immunopharmacology Research Group

“Pro-inflammatory cytokines induce the expression of functional TRPA1 (transient receptor potential ankyrin 1) in human A549 lung epithelial cells”

### Room 10: Computational Biology

Andrey Vinogradov, Neuro Group

“MEA analysis pipeline”

Vasyl Mykuliak, Protein Dynamics

“Talin–vinculin interactions under mechanical load”

Vatsala Chauhan, Laboratory of Biosystem Dynamics (LBD)

“A library of synthetic tandem promoters inspired by stochastic models”

Alisa Pavel, FHAIVE

“VOLTA: adVanced mOLEcular neTwork Analysis in Python”

Mikko Lehtimäki, Computational Neuroscience Group

“Subspace approximation as a tool for biosystem modeling”

Laura Saarimäki, FHAIVE

“Adverse outcome pathways to guide the development of IATA”

### Room 11: Gastroenterology

Laura Martin Diaz, Intestinal Signaling and Epigenetics

“Unveiling the role of F-actin cleaving proteins in the regulated secretion of the intestinal and pancreatic hormones”

Riku Tauschi, Celiac disease research center

“Association of coexisting autoimmunity to the baseline features and long-term outcomes in celiac disease”

Iida Ahonen

“Vomiting and nausea in celiac disease: prevalence and associated factors”

Juliana Cerqueira, Celiac Disease Research Center

“Dissecting the contribution of single nucleotide polymorphisms in CCR9 and CCL25 genomic regions to the celiac disease phenotype”

Sara Koskimaa

“The associations of age, sex and genetics on the clinical features of celiac disease”

Sofia Kröger, Tampere Center for Child, Adolescent and Maternal Health Research

“Differential diagnostics and long-term prognosis of non-atrophic duodenal changes in children undergoing esophagogastroduodenoscopy with systematic biopsy sampling”

### Room 12: Molecular and cellular physiology

Latifeh Azizi, Protein Dynamic (PD)

“Talin in health and diseases”

Sonja Rajić, Molecular Epidemiology

“Genetic and epigenetic regulation of nc886 RNA levels”

Elina Mäntylä

“Brick Strex: a robust device built of LEGO bricks for mechanical manipulation of cells”

Päivi Lillsunde, Mitochondrial Biology

“Mitochondrial thermobiology in Drosophila melanogaster”

Kateryna Gaertner, Mitochondrial Bioenergetics and Metabolism  
"Mitochondrial-nuclear incompatibility is a potential genetic mechanism enhancing the species boundary"

Amna Adnan, Adult Stem Cell group  
"Effects of obesity on adipose stromal/stem cell immunomodulation and mitochondrial respiration capacity"

12:25 Break, 10 min

12:35 MET Research Pitches (à 2 min + 5 min discussion)

### 12:35 Pitching session 3

#### Room 13: Cancer 3

Laura Oksa, HemoRes  
"Genomic determinants of therapy response in ETV6-RUNX1 leukemia"

Saara Laukkanen, Hemato-oncology research group  
"A novel combination therapy to target signaling pathways in T-cell Acute Lymphoblastic Leukemia"

Joonas Uusi-Mäkelä, Computational Biology  
"Integrative DNA methylation analysis of AT/RTs, medulloblastomas, and choroid plexus tumors reveals tumor-specific developmental trajectories and epigenetic regulators of malignancy"

Miikka Lehtonen  
"Adjuvant docetaxel for high or intermediate-risk local prostate cancer after external beam radiation: the key health-related quality of life results of randomized, phase 3 SPCG-13 trial"

Kaisa Liimatainen, Bioimage informatics group  
"Self-supervised segmentation and modeling of structures in 3D histology data"

Saara Marttila, Molecular epidemiology  
"Methylation pattern of the metastable epiallele non-coding 886 (nc886) in non-human mammals"

#### Room 14: Bioprinting and sensing

Hatai Jongprasitkul, Biomedical and Tissue Engineering Group  
"Two-step crosslinking to enhance the printability of methacrylated gellan gum biomaterial ink for extrusion-based 3D bioprinting"

Pyry Grönroos, Eye Group  
"Bioprinting of human pluripotent stem cell derived corneal endothelial cells on bioengineered membrane"

Anastasia Koivikko, Bioinspired Materials and Robotics  
"Pneumatic soft robots with perception"

Paula Puistola, Eye Group  
"Novel Bioink Design for 3D Bioprinting of Human Pluripotent Stem Cell Derived Corneal Epithelial Cells"

Shahbaz Ahmed, Wireless Identification and Sensing Systems Research Group (WISE Group)  
"Performance Evaluation of Wearable Metasurface-Enabled Quasi-Yagi Antenna for UHF RFID Reader with End-Fire Radiation along the Body Surface"

Laura Honkamäki, NeuroGroup  
"Novel method to produce a layered 3D scaffold for human pluripotent stem cell-derived neuronal cells"

#### Room 15: Vasculature and dermatology

Lotta Isoaari, NeuroGroup and Adult Stem Cell Group  
"Building human neuro-vascular interactions in microphysiological environment"

Alma Yrjänäinen, Adult Stem Cell Group  
"Utilizing different mesenchymal stem/stromal cells as pericytes results in differing vascular network phenotypes in a microfluidic chip"

Elina Kalke, Micro- and Nanosystems Research Group  
"Development of organ-on-chip devices for perfusable 3D vasculature and co-culture applications"

Antonio Federico, FHAIVE

“The integration of prior knowledge and network analysis uncovers molecular characteristics of psoriasis”

Ilari Mäki-Opas, The Immunopharmacology Research Group

“TRPA1 as a potential factor and drug target in scleroderma: dermal fibrosis and alternative macrophage activation are attenuated in TRPA1 deficient mice in experimentally induced scleroderma”

Anastasiia Astanina, Bio-ceramics,-glasses,-composites group,  
Biomaterials and tissue engineering group,

“Fabrication and in vitro characterization of Gellan Gum/Bioactive Glass composites with potential for bone/skin regeneration”

#### Room 16: Immunology and mitochondrial biology

Antti Pemmari, The Immunopharmacology Research Group

“Chondrocytes from osteoarthritis patients adopt distinct phenotypes in response to central Th1/Th2/Th17 cytokines”

Sanna-Kaisa Harjula, Experimental Immunology

“Genes affecting mycobacterial infection in zebrafish”

Meri Uusi-Mäkelä, Experimental immunology

“A zebrafish model to study the inflammasome adaptor pycard in mycobacterial infection”

Katharina Bremer, Mitochondrial research

“AOX plays a key role in resistance to sulphide toxicity in a marine invertebrate”

Vili Lampinen, Protein Dynamics

“Norovirus-like particle vaccine platform against self-antigens: Controlling misbehaving proteins in the body”

Mugen Terzioglu, Howard Jacobs

“How hot can your mitochondria get?”

#### Room 17: Neuro & Cardiovascular

Denis Depes, Cardiovascular pathology group

“Role of caval veins myocardial sleeves autonomic innervation in subjects deceased due to cardiovascular disease”

Satu Jäntti, Neuro Group

“Co-culture of hiPSC-derived neurons and cardiomyocytes in compartmentalized microfluidic device”

Mahmoud Gaballa, Heart Group

“Cardiac ischemia on-a-chip: Antiarrhythmic effect of Levosimendan on ischemic myocardial cells using human induced pluripotent stem cell-derived cardiomyocytes”

Jan Kaslin

“Orchestrating the repair of brain and spinal cord”

#### Room 18: Health Data Science

Miriana Carla Torquati

“Data-driven adaptive interventions and AI-enhanced coaching to improve employee wellbeing and productivity – Coachbeat study”

Veera Hautanen, FHAIVE

“Data driven method in In Vitro model development”

Narayan Puthanmadam Subramaniam

“Causal coupling inference from multivariate time series based on ordinal partition transition networks”

Antti Kallonen, DSH

“Data analysis in critical care medicine”

Binisha Hamal Mishra, Clinical Chemistry

“Gene set analysis of transcriptomics data to identify biological processes associated with early traits of osteoporosis and atherosclerosis in the Young Finns Study”

Angela Serra, FHAIVE

“FHAIVE: the Finnish Hub for Development and Validation of Integrated Approaches”



## Room 19: Ophthalmology

Petri Purola, Department of Ophthalmology

“Visual impairment due to age-related macular degeneration during 40 years in Finland and the impact of novel therapies”

Meri Vattulainen, Eye Group

“Corneal epithelial differentiation of human pluripotent stem cells generates ABCB5+ and  $\Delta Np63\alpha$ + cells with limbal cell characteristics and high wound healing capacity”

Jenni Partinen, Biophysics of The Eye

“RPE-mediated phagocytosis on photoreceptor outer segments in zebrafish retina”

Hanna Samposalo, Ophthalmology group

“What Makes You Move? Measuring the Effect of Moving Visual Stimuli in Peripheral Vision on Postural Stability in a VR Cave System”

Viivi Karema-Jokinen, Nymark Lab

“Altered calcium dynamics in Induced Pluripotent Stem Cell-Derived Retinal Pigment Epithelial Cells from patients with Age-Related Macular Degeneration”

13:15 Closing words, Vice Dean Pasi Kallio