



# Corning Life Sciences 2019 3D Cell Culture User Day

June 6, 2019 | Loetje aan 't IJ | Amsterdam, The Netherlands

## Agenda

Time	Speaker	Institution	Topic
8:30 a.m.			Registration
8:50	Peter WEISER	Corning	Welcome and information
09:00	Gera GOVERSE	Ocello	Image-based quantification of tumor-immune cell interactions in 3D cultures
09:35	Kadi LÖMUSSAAR	Hubrecht Institute	Organoids as a promising tool for ovarian cancer research
10:10			Networking
10:40	Magnus INGELMAN-SUNDBERG	Karolinska Institutet	ULA liver spheroids for studies of liver function, liver diseases, chronic drug toxicity, and pharmacokinetics
11:15	Farzin POURFAZAD	Hubrecht Organoid Technology	Organoids: A novel patient-derived platform for disease modeling and drug development. Emerging model systems for validation of targetable biomarkers and drug screening
11:50	Christian HIRT	ETH Zuerich	Discovery of new treatment options for pancreatic cancer using a high throughput drug screening approach on patient-derived organoid lines
12:25 p.m.			Lunch
13:25	Bart SPEE	Utrecht University	Biofabrication of perfusable hepatocyte constructs and artificial bile ducts
14:00	Christian HOLZ	Molecular Devices	New 3D applications on Molecular Devices intelligent automated imaging solutions
14:35	Nicolas ANDRÉ	Corning	Three-dimensional models: Organoid study and co-culture for oncology
15:10			Networking
15:40	Philip WAGSTAFF	AMC Amsterdam	Retinal Organoids: Modelling and understanding the genetics of glaucoma
16:15	Nicolas ANDRÉ	Corning	Workshop session addressing questions from participants
16:50	Peter WEISER	Corning	Concluding remarks

## Speakers and Presentations Overview



### Dr. Nicolas André

*Scientific Applications and Support Manager  
Corning Life Sciences, EMEA*

#### **Three-dimensional models: Organoid study and co-culture for oncology**

Nicolas received his Ph.D. from the University of Frankfurt/Main, in 2006, after studying membrane protein biochemistry at the Max Planck institute of biophysics, under the supervision of Hartmut Michel, 1988 Chemistry Nobel prize. He completed his training with a postdoc research project on membrane protein interaction in CNRS Marseille.



### Gera Goverse

*Senior Scientist  
Ocello, The Netherlands*

#### **Image-based quantification of tumor-immune cell interactions in 3D cultures**

Gera Goverse was trained as an immunologist studying the role of different environmental factors on both the local and systemic immune system. These studies were performed in different universities situated in both The Netherlands and Belgium. Here, she made use of novel technologies to investigate the interaction of immune cells with their environment. Currently, Gera is using this obtained knowledge as senior scientist within Ocello to study tumor-immune cell interactions. Ocello is a CRO that helps customers to get the full potential out of their compounds, by offering *in vitro* assays which recapitulate and quantify complex human biology in a robust high throughput format.



### Dr. Christian Hirt

*Postdoctoral Fellow  
ETH Zürich, Molecular Health Science, Switzerland*

#### **Discovery of new treatment options for pancreatic cancer using a high throughput drug screening approach on patient-derived organoid lines**

Christian Hirt is postdoctoral fellow at the ETH Zurich in group of Gerald Schwank where he is working on pancreatic cancer organoids and their translational use. He studied Medicine at the University of Berne and did a PhD in Biomedical Engineering at the University Basel, where he studied and engineered the tumor microenvironment of different tumors using a microfluidic bioreactor system. After a research fellowship focusing on deciphering the T-Cell-Receptor repertoire in colorectal cancer at the Netherlands Cancer Institute, he moved 2014 to the Dana Farber Cancer Institute in Boston, where he studied endotoxin effects in the context of breast cancer. Since 2016 he is at the ETH Zurich.

### Dr. Christian Holz

*Application Specialist  
Molecular Devices, Germany*



#### **New 3D applications on Molecular Devices intelligent automated imaging solutions**

Christian has been supporting cellular imaging products from Molecular Devices for the last 12 years. Prior to that, he worked in the development of image-based high content screens at Cenix Bioscience and supported analysis software solutions at Definiens. He holds a M.Sc. in structural molecular biology from Birkbeck University of London.

## Speakers and Presentations Overview (continued)



### Professor Dr. Magnus Ingelman-Sundberg

*Professor of Molecular Toxicology  
Karolinska Institutet, Sweden*

#### **ULA liver spheroids for studies of liver function, liver diseases, chronic drug toxicity, and pharmacokinetics**

Magnus Ingelman-Sundberg, Ph.D.; BSc.Med is Professor of Molecular Toxicology since 1996 and research group leader in Pharmacogenetics at the Department of Physiology and Pharmacology, Karolinska Institutet, Biomedicum since 2006. He has more than 420 original papers, 24,500 citations (39,000 in Google Scholar) and an h-factor of 85 (ISI) or 105 (Google Scholar) and assigned “Highly Cited Researcher” for 2014, 2015, 2016, and 2017 by Thomson & Reuters/Clarivate. He is a member of The Nobel Assembly at Karolinska Institutet since 2008 and a member of Editorial Advisory Boards (e.g., Trends in Pharmacological Sciences (Edit Board), Pharmacogenetics and Genomics, Pharmacogenomics, Drug Metabolism Reviews, Drug Metabolism and Disposition, Human Genomics) and also a member of Academia Europaea. His research focuses on genetics, epigenetics, polymorphism, regulation, function, and toxicology of the hepatic ADME system which aims at understanding interindividual differences in drug response. Furthermore he develops novel hepatic *in vitro* systems for studying liver function, liver diseases, and validation of hepatic drug targets. Further information from an Interview with Magnus Ingelman-Sundberg See Trends Pharmacol Sci. 2015; 36:65-7.



### Kadi Lõmussaar

*Ph.D. Student  
The Hubrecht Institute, The Netherlands*

#### **Organoids as a promising tool for ovarian cancer research**

Kadi Lõmussaar is currently a Ph.D. student at Prof. Hans Clevers' lab at the Hubrecht Institute in The Netherlands. In 2003 she earned her Bachelor of Science in Genetechnology at the University of Tartu in Estonia. She then chose to pursue her Master's degree in Biomedicine at the same university which she graduated cum laude in 2015. Her thesis work was performed at the lab of Dr. Viljar Jaks focusing on stem cell signaling and liver regeneration. After completing her MSc, she applied for Erasmus post-graduate fellowship to perform a 9-month internship at the lab of Professor Hans Clevers. During the internship she had the chance to work on an ovarian cancer organoid project, directly supervised by a postdoc, Dr. Oded Kopper. The great research and motivating environment encouraged her to apply for Ph.D. position at the Clevers' lab which she started in July, 2016. Since then she has focused on applying organoid technology on gynecological cancer research.



### Dr. Farzid Pourfazad

*Group Leader  
Hubrecht Organoid Technology, The Netherlands*

#### **Organoids: A novel patient-derived platform for disease modeling and drug development. Emerging model systems for validation of targetable biomarkers and drug screening**

Kidney organoids are three-dimensional units with proximal tubules, distal tubules, and podocytes in patterned segments, recapitulating the architectural subunit of the kidney. Using CRISPR-Cas gene editing, we have further generated kidney organoids with loss-of-function mutations in genes associated with polycystic kidney disease (PKD), which form cysts from kidney tubules similar to the human disease. When PKD organoids are grown in the absence of adherent cues, the rate of cystogenesis is greatly increased, and the organoids expand 4,000-fold in size, generating cysts that can readily be seen in by eye. Screening of organoids in high throughput formats further identifies a new role for non-muscle myosin in this disease, which may facilitate attachments between tubular cells and their surroundings. These findings reveal a critical role for microenvironment in human PKD, and raise new possibilities for understanding disease from the cellular to the organoid scale.

## Speakers and Presentations Overview (continued)



### Dr. Bart Spee

Assistant Professor

Faculty of Veterinary Medicine, Universiteit Utrecht, The Netherlands

#### Biofabrication of perfusable hepatocyte constructs and artificial bile ducts

Dr. Spee has more than 18 years' experience in Molecular Biology and Veterinary Medicine, and is (co)author of over 70 peer-reviewed scientific publications. Following a Ph.D. in Molecular Biology on pathways of regeneration and fibrosis of liver diseases, he took up a position as postdoc at the department of pathology at the University of Leuven, Belgium, under the guidance of professor Tania Roskams. Here he used molecular tools and combined these with the vast tissue bank at the pathology department, resulting in an increased knowledge on the activation of the adult stem cells of the liver including its neoplastic offspring. After an internship at the Laboratory of Experimental Carcinogenesis (NIH, Bethesda, VA) with Dr. Thorgeirsson where he worked on cholangiocarcinoma's, he returned to Utrecht University as an assistant professor. Currently he is investigating the use of stem cells, ranging from adult stem cells (organoids) to multipotent stromal cells (MSCs) and induced pluripotent stem cells (iPSCs) for functional recovery of liver diseases. One of the focus points of the research is the transplantation of adult stem cells in a canine model for Wilson's disease. Another primary focus is the creation of physiologically relevant *in vitro* liver models using biofabrication technology that can be used for drug toxicity testing and personalized medicine approaches.



### Philip Wagstaff

Ph.D. Student

University of Amsterdam, The Netherlands

#### Retinal Organoids: Modelling and understanding the genetics of glaucoma

Philip is currently a Ph.D. researcher studying the genetics of glaucoma under the supervision of Professor A.A.B. Bergen (Department of Clinical Genetics) at Amsterdam UMC and Professor N.M. Jansonius (Department of Ophthalmology) at University Medical Center Groningen (UMCG) in The Netherlands. Originally from the UK, he completed his Masters at the University of Liverpool in Biomedical Science and Translational Medicine, specializing in Neuroscience. During this time, he was introduced to genetic research, using the nematode *C. elegans* as a model for neurodegenerative diseases. He has since built on this during his Ph.D., generating retinal organoids as a way to study complex retinal disorders such as glaucoma, retinoschisis, and albinism.

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