

Cologne Seminars on Ageing

Speaker: Meritxell Huch

MPI of Molecular Cell Biology and Genetics, Dresden (GER)



**Tuesday, 21st of September 2021,
at 4.00 pm**

Videoconference

**Host: Chrysa Nikopoulou,
on behalf of the Postdoc Committee
(MPI Age)**

Scientific background

2019-present: Lise Meitner Max Planck Research Group Leader, Max Planck Gesellschaft, Max Planck Institute of Molecular Cell Biology and Genetics (MPI-CBG), Dresden, Germany.

2014 – 2020: Sir Henry Dale Wellcome Trust Group Leader, The Gurdon Institute, University of Cambridge-UK. Affiliated Group Leader at The Wellcome Trust/MRC Cambridge Stem Cell Institute. Member of the Department of Physiology, Developmental Biology and Neurosciences, University of Cambridge

2008 – 2014: Postdoctoral Fellow (Marie Curie Fellow-IEF). Hubrecht Institute for Developmental Biology and Stem Cell Research. Utrecht, The Netherlands. Advisor: Prof Hans Clevers

Academic qualifications:

2007 PhD Centre for Genomic Regulation-CRG-, University of Barcelona, Barcelona, Spain.

2003 Master of Advanced Studies- University of Barcelona (UB).

2001 BSc in Pharmaceutical Science, University of Barcelona (UB)

Prizes and Awards:

2019: The BINDER Innovation Prize 2019. German Society for Cell Biology (DGZ).

2018: 'Researcher of the Year', Cambridge Independent Science and Technology Awards. (Highly Commended)

2018: EMBO Young Investigator Award.

2018: Dame Sheila Sherlock Prize 2018. The British Association for the Study of the Liver (BASL). "Major's BASL award to recognize young researchers who will help shaping the future of UK hepatology".

2017: The Women in Cell Biology Early Career Medal for 2018 The British Society for Cell Biology. 2016: The Hamdan Award for Medical Research Excellence Hamdan Awards.

2014: 2014 NC3Rs International Prize. National Centre for the Replacement, Refinement & Reduction of Animals in Research. UK. For growing "mini-livers" in culture.

Liver and pancreas organoids; their application to the study of tissue regeneration and disease

About Dr. Huch's talk:

In vitro 3D cultures are emerging as novel systems to study development, organogenesis and stem cells ex-vivo. We have developed organoid cultures from healthy and diseased, human and mouse, adult and embryonic tissues for a range of organs including stomach, liver and pancreas. These have allowed the expansion of adult and embryonic primary cells, which grow into 3D-epithelial organoid structures that self-assemble, can be clonally expanded and recapitulate aspects of the structure and function of the tissues-of-origin in a dish.

Here, I will summarize our findings on how this culture system is amenable for disease modeling and for the study of tissue regeneration in a dish. Briefly, our mouse and human liver and pancreas organoid culture system enable the long-term expansion of primary cells, without any genetic manipulation. We recently transferred this system to model liver cancer ex-vivo and demonstrated its applicability for drug testing. Additionally, we recently found that our organoid cultures enable the study of some aspects of liver regeneration in a dish, especially the activation of adult differentiated liver cells into bi-potent progenitors.

In summary, liver and pancreas primary cells grown as organoids open up experimental avenues for disease modeling, toxicology studies, regenerative medicine and gene therapy.