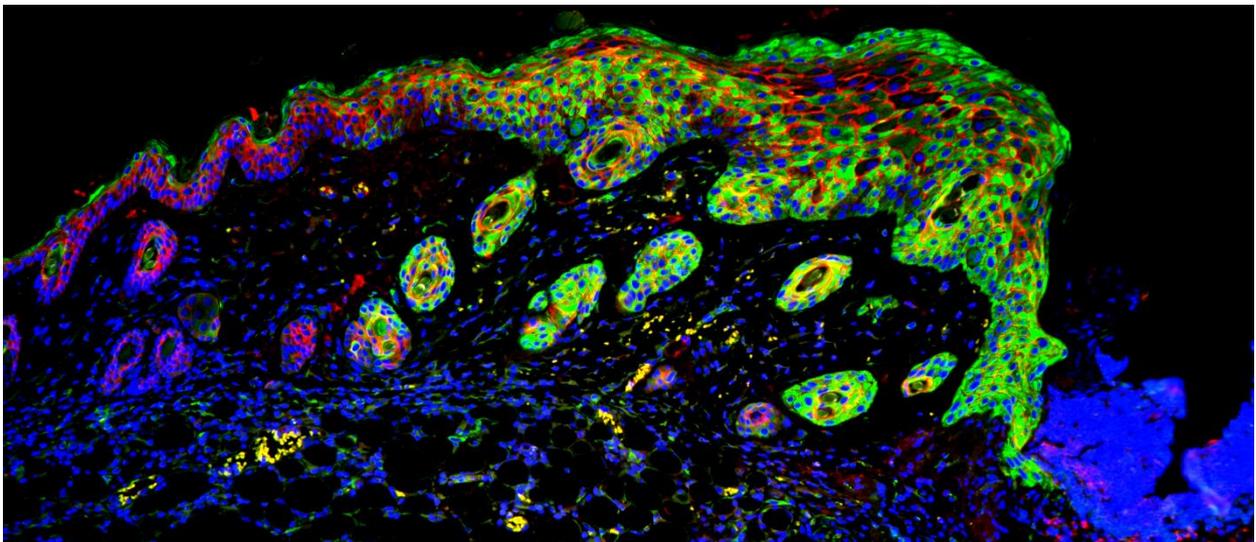


10th TERMIS

# Winterschool 2023

“A Workshop Series on Current Hot Topics in  
Regenerative Medicine”



@ Nadja Ring, Helene Dworak

Radstadt – Austria  
January 8<sup>th</sup>-11<sup>th</sup>, 2023

With support from the Society of the Advancement of Research in Shock and Tissue Regeneration

# Program

Sunday, January 8<sup>th</sup>

16:00-19:15

## 16:00 Welcome

Heinz Redl

## 16:15 – 19:15 From Bedside to Bench

In biomedical research, it is easy to get lost in your own professional bubble of lab organization, scientific details and the peculiarities of academia. The reality check of clinical needs and feasibility might not get the attention it deserves. Often, we go years without ever meeting the target audience of our research or never meet them at all: patients. In this session, we will go into aspects of the “real world” to be taken into account when seeking to meet clinical needs. Two surgeons will give insights into their experiences by the bedside. Finally, in a closing workshop you will reflect upon how you can involve these new insights as well as open innovation concepts into your current or future research projects.

**Chair: Conny Schneider (SHoW)**

*Speakers:*

1. Conny Schneider (Ludwig Boltzmann Research Group SHoW)
2. Albert Kröpfl (Klinik Diakonissen Schladming), tbc
3. Georg Mattiassich (Klinik Diakonissen Schladming), tbc

Monday, January 9<sup>th</sup>

08:30-11:30 / 16:30-19:00

## 08:30 – 11:30 Advanced Strategies

It is well accepted that currently hurdles faced in regenerative medicine can only be overcome by the application of therapeutic cells that produce crucial factors to trigger desired regeneration processes. Here it is to highlight that cell-therapeutic steps are labor- and cost-intensive, hard to implement in treatment approaches and most importantly their therapeutic efficacy is often highly variable. In order to get more reliable and consistent outcomes in triggered biological processes including tissue regeneration, modified cells or cell-derived products are used instead of classical cell therapies. In this symposium we will discuss the potential of these advanced strategies regarding translational application.

**Chairs: Andreas Teuschl (FH Technikum Wien) & Sylvia Nürnberger (MedUni Wien / LBI Trauma)**

**Speakers:**

1. Utkan Demirci (Stanford University School of Medicine)
2. tbd

□ BREAK □  
11:30-16:30

## 16:30 – 18:30 Extracellular Vesicles

It has become increasingly clear that multipotent mesenchymal stromal cells (MSCs) generally do not directly contribute to tissue regeneration, but rather serve as “cell factories” producing a variety of bioactive molecules and extracellular vesicles (secretome) that can be employed as therapeutic modalities without the disadvantages of a classical cell therapy. This session will give an introductory overview to the most recent developments in EV-based research and exemplify the development of this novel therapeutic modality to treat high burden diseases with unmet medical needs. Despite significant advances made in this relatively new area of biomedical research, translation has been held back by various challenges. The second part of the session will be dedicated to a workshop discussing the hurdles en route to clinical translation and future perspectives of this exciting field in regenerative medicine.

**Chair: Andreas Traweger (PMU Salzburg)**

**Speakers:**

1. Wolfgang Holthoner: „Extracellular Vesicles - Promises and Challenges.“ (LBI Trauma)
2. Andreas Traweger: “Application of MSC-EVs to Promote Tendon and Bone Repair”. (PMU Salzburg)
3. Mario Gimona: „Translating EVs as Safe Therapeutics for Indications with High Unmet Medical Needs.“ (PMU Salzburg)
4. Workshop/Round Table

## 18:30-19:30: Poster Session

**Chair: Veronika Hruschka**

**Tuesday, January 10<sup>th</sup>**

**08:30-11:30 / 16:30 – 18:00**

### **08:30 – 11:30 Senescence**

Senescent cells have been implicated as contributing factors in a variety of age associated diseases and indeed, their removal by a novel class of drugs termed senolytics is successful in alleviating almost any age-associated disease tested in pre-clinical models so far. We will here discuss to what extent senescent cells inhibit regeneration and if senolytics might accelerate regenerative processes.

**Chairs: Johannes Grillari (LBI Trauma) & Mikolaj Ogrodnik (SHoW)**

*Speakers:*

1. *Florian Gruber (MedUni Wien)*
2. *tbd*

**□ BREAK □**  
**11:30-16:30**

### **16:30 – 18:00 Simulation , Artificial Intelligence & Imaging**

Computational methods are a powerful scientific tool to access information previously unavailable. State of the art 3D imaging, computational simulation and artificial intelligence approaches all massively rely on data processing on a large scale. We will discuss the potential of these techniques in biomedical applications, some of their technical details and their challenges.

**Chair: Patrick Heimel (LBI Trauma)**

*Speakers:*

1. *Patrick Heimel (LBI Trauma)*
2. *Paul Slezak (LBI Trauma)*
3. *tbd*

**□ SOCIAL EVENT □**  
**18:00**

Wednesday, January 11<sup>th</sup>

08:30-11:30

## 08:30 – 11: 30 Understanding human Disease – from accurate Modelling to Omics-based (patho)mechanistic and Biomarker Research

Human pathologies have been studied for centuries, however, translating the vast amount of existing knowledge into efficient clinical therapies remains challenging. A major hurdle is the lack of adequate organotypic disease models for pre-clinical research, as current approaches do not fully reflect the complexity, maturity and functionality of adult tissue in vivo. In addition, diseases which manifest early in development are particularly hard to model, because the heterogeneity of embryonic and somatic stem cells adds another layer of complexity. While Omics approaches have generated vast amounts of useful data, the complexity of translating them into clinically relevant findings requires the use of advanced methods for data analysis, interpretation and validation.

The first part of this session will critically deal with recent advances and current open questions in the field of tissue homeostasis and disease – with the aim to spark discussion on feasible strategies to better model and identify druggable pathomechanisms in human pathologies. The second part of this session will be a workshop on methods, possibilities and limitations in transcriptomics data analysis on bulk (tissue) and single cell level.

**Chairs: Peter S. Zammit & Philipp Heher (King's College London)**

*Speakers:*

1. Peter S. Zammit (King's College London)
2. Francesco Saverio Tedesco (University College London/ The Francis Crick Institute)
3. Elisabeth Ehler (King's College London)
4. Carla Mulas (Altos Labs, Cambridge Institute)
5. Elise Engquist (King's College London)

### □ Closing Remarks □

### Registration

**Early bird registration until December 4<sup>th</sup>**

**Registration Deadline: December 18<sup>th</sup>**

### Contact Address:

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### *COVID 19 concept*

***For participation 2G (vaccinated or recovered) and additionally a negative PCR test (not older than 48 hours) is mandatory.***

### *Cover picture*

*A regenerating mouse wound with phospho-rpS6 (green), E-cadherin (red) and cell nuclei (blue) visualized using immunohistofluorescence. @Nadja Ring, Helene Dworak*