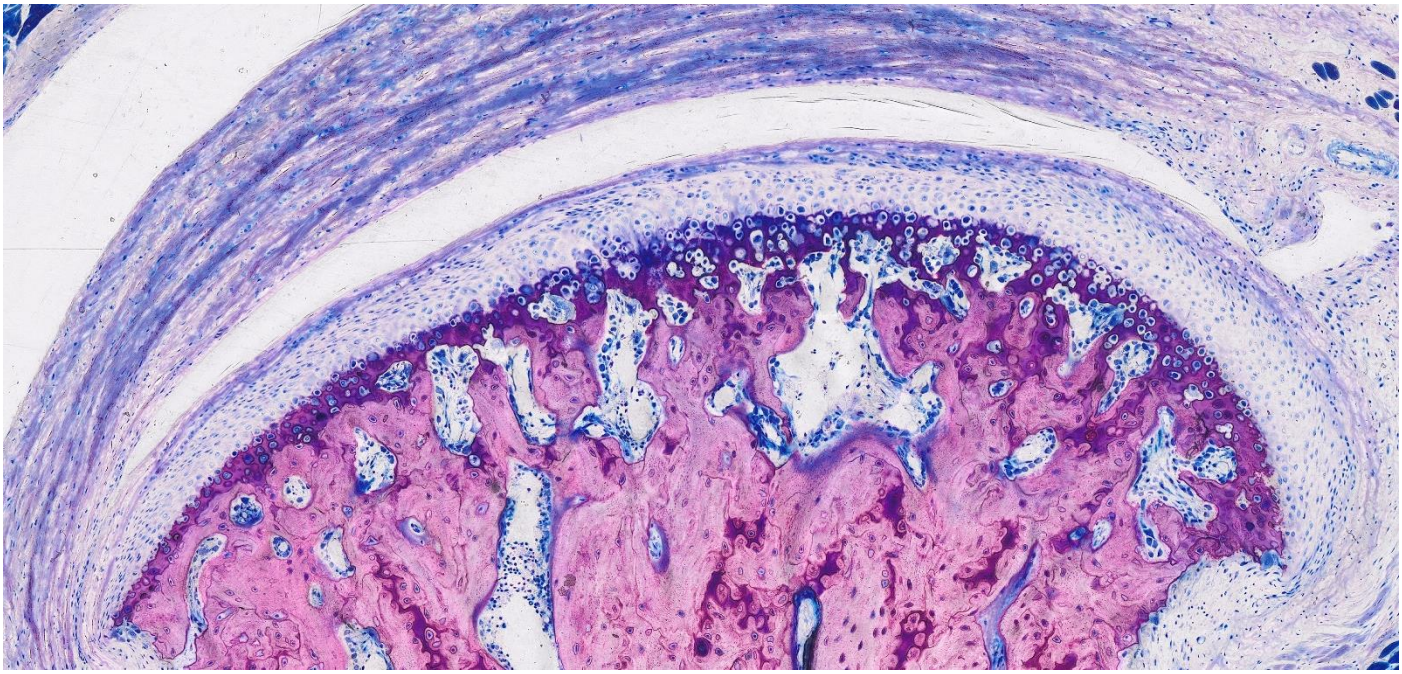
Austrian Cluster for Tissue Regeneration

AUVA

LUDWIG BOLTZMANN INSTITUTE Traumatology
The Research Center in Cooperation with AUVA

11th TERMIS
Winterschool 2024
"A Workshop Series on Current Hot Topics in Regenerative Medicine"



Radstadt – Austria
January 7th-10th, 2024

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

MatureTissue
Joint DC by UASTW and TUW

FH University of Applied Sciences TECHNIKUM WIEN

Stadt Wien Wirtschaft, Arbeit und Statistik

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LUDWIG BOLTZMANN RESEARCH GROUP
Senescence and Healing of Wounds

Program

Sunday, January 7th

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. Three 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. *Georg Mattiassich (Klinik Diakonissen Schladming)*
2. *Heinz Bürger (Klinik Diakonissen Schladming)*
3. *Stefan Nehrer (University for Continuing Education Krems)*

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Monday, January 8th

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. Andreas Teuschl (FH Technikum Wien)
2. Sylvia Nürnberger (MedUni Wien / LBI Trauma)
3. Jürgen Groll (University Clinic Würzburg)
4. Utkan Demirci (Stanford University)
5. Gozde Durmus (Stanford University)

B R E A K
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 Holnthoner: „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. Round Table

18:30-19:30: Poster Session

Chair: Veronika Hruschka

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Tuesday, January 9th

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 (LBG SHoW group)

Speakers:

1. *Marlene Wahlmüller (LBI Trauma / Morphomed GmbH)*
2. *Ingo Lämmermann (Rockfish Bio)*
3. *Mikolaj Ogrodnik (SHoW) "Lessons learned from MICSE"*
4. *Justin Cooper-White (University of Queensland)*

B R E A K

11:30-16:30

16:30 – 18:00 Imaging & Biofabrication

Every advance and new discovery in medical research, such as in the field of biofabrication, may lead to further questions for future research in areas previously not considered. These can often require a new approach in imaging to study. Parallel advances in the imaging techniques have expanded the range of phenomena that can be studied leading to further research questions. By integrating imaging techniques with computational methods and data analysis, it becomes possible to extract quantitative information, model complex systems and further the understanding of the underlying mechanisms.

Imaging is involved in almost any kind of medical research and consequently, we will be covering a wide range of topics in this session. From contrast enhanced µCT, enabling the quantification of soft tissues in µCT images, to the pleasures and pitfalls of imaging muscle cells in culture.

Chair: Patrick Heimel (LBI Trauma)

Speakers:

1. *Patrick Heimel (LBI Trauma)*
2. *Elisabeth Ehler (King's College London): "Imaging and muscle cells - my two loves"*
3. *Jos Malda (UMC Utrecht)*

SOCIAL EVENT

18:00

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LUDWIG BOLTZMANN RESEARCH GROUP Senescence and Healing of Wounds

Wednesday, January 10th

08:30-11:30

08:30 – 11: 30 Understanding human Disease – from biomimetic Modelling to (patho)mechanistic and translational 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 barely reflect the complexity and functionality of adult tissues in vivo, e.g. including vascularisation. In addition, diseases which manifest early in development are particularly hard to model because of the heterogeneity observed in embryonic and somatic stem cell models. 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 biomimetic modelling, such as advanced predictive in vitro modelling, integrated big data approaches or high content analyses.

This session will critically deal with recent advances and current challenges in personalised and tissue-engineering based modelling of tissue homeostasis and disease – with the aim to spark discussion on feasible strategies to more accurately represent functional human tissues for identification of druggable pathomechanisms in human pathologies.

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. *Shulamit Levenberg (Technion Center)*
4. *Carla Mulas (Altos Labs, Cambridge Institute)*
5. *Thomas Iskratsch, PhD (Queen Mary University of London)*

Closing Remarks

Registration

Early bird registration until December 4th

Registration Deadline: December 18th

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Cover picture

Levai–Laczko staining of the temporomandibular joint, with bone tissue shown in pink, cells in blue and articular cartilage in a lilac hue. Fibrous connective tissue (purple) separates the synovial cavity. © Karl-Donath-Laboratory, University Clinic of Dentistry, Vienna