

Dear CRC 1149 members,

We are glad to see that the members of the CRC continued with their work, although we had a warm summer with a lot of sunny days. There was the Sino-German Bilateral Seminar on Tissue Regeneration in Trauma in Dalian City in China, the meeting of the European Orthopaedic Research Society in Munich, the Congress of the German Society for Orthopaedics and Trauma Surgery in Berlin, and the meeting of the European Shock Society in Paris, where our members presented their latest findings and learned about new research developments. Besides, there are some new GEROK announcements.



We wish you all the best for the rest of the year,

Melanie Haffner-Luntzer and Martin Wepler

## *Sino-German Bilateral Seminar on Tissue Regeneration in Trauma*

The Sino-German Bilateral Seminar on “Tissue Regeneration in Trauma” took place in the International Conference Hall of the First Affiliated Hospital of Dalian Medical University in Dalian City (Liaoning Province) from 30<sup>th</sup> July – August 1<sup>st</sup>.

After a warm welcome from both sides, the clinical scientists of the Dalian Medical University, the Dalian Hospital and also the German group exchanged their greetings. The first day started with a general session highlighting standard procedures and current research on wound healing in Germany and in China. There were key lectures on the clinical needs of improving wound healing and wound care as well as key lectures on new scientific findings using Maggot secretions in wound healing and new skin stretching devices. Each talk was followed by intensive and fruitful discussions.



In the afternoon of the first day, the second part of the meeting focused on vascularity in wound healing and plastic surgery wound closure, but also on new models for cartilage defect repair using scaffold techniques and cell cultures.

It turned out, that there is a huge experience in the behavior of microvessel architecture and surgical wound repair in China. In addition to that, brilliant new methods for cartilage repair were introduced. The German group added new techniques in vascular disorders of the lower leg as well as latest stemcell research in their presentations.

Another focus of the conference was basic research. The Chinese group gave very high quality level presentations on wound healing and in bone regeneration. The German Group was highly interested in the presentations given on nerve injuries and mechanisms promoting nerve regeneration.

Overall, the meeting was highly effective. There was a perfect organization on behalf of the Chinese group. At the end of the meeting the three topics of immediate interest were identified by both sides that everybody agreed on to continue further partnership:

- Tissue regeneration based on scaffolds and stem cells
- Basics of wound healing mechanisms and parameters that influence wound healing
- The role of MSC in regeneration of cartilage and nerves tissue

As all these identified topics would suit the CRC 1149 very nicely, the unanimous decision was made that the next step is to apply for a follow meeting in 2018, along with the corresponding groups of the CRC 1149.

## *Meeting of the German Society for Orthopaedics and Trauma Surgery (DKOU)*

From 24<sup>th</sup> to 27<sup>th</sup> of October 2017, the biggest German congress for orthopedic and trauma surgery (DKOU) took place in Berlin with over 10.000 delegates. The various fields of orthopedic and trauma surgery as well as diagnostic tools and therapy, further the prevention and rehabilitation were topics of the DKOU 2017 under the main congress theme „motion is life“. The participation of the United States of America as this year's guest nation was a valuable enrichment for the congress, which is becoming more and more international each year.

Researcher and clinicians from Ulm achieved several awards and honours at the DKOU: **Dr. Julia Wölfle-Roos** from the **RKU** received a **congress grant** (800 Euro), **Dr. Melanie Haffner-Luntzer** from the **Institute of Orthopedic Research and Biomechanics (Head: Prof. Anita Ignatius)** was awarded with the **ORS Travel Award** (2,500 Euro), **Verena Fischer**, also from the **Institute of Orthopedic Research and Biomechanics**, received the **AOTrauma Research Award** (7,500 Euro) and **Jana Riegger** from the **RKU** (working group of **Prof. Rolf Brenner**) was awarded with the “**Grundlagenforschungspreis**” from the **German Society for Orthopedics and Trauma** (10,000 Euro).

***Congratulations to all awardees!***

### *Meeting of the European Orthopaedic Research Society (EORS)*

The European Orthopaedic Research Society (EORS) aims to promote research and development in orthopaedic surgery and related sciences in Europe through interdisciplinary coordination, exchange of scientific and technical experience, and education.

In 2017, the annual meeting of the society was held in Munich from September 13<sup>th</sup>-15<sup>th</sup>. Over 400 delegates from 38 different countries attended the meeting and presented their latest discoveries in clinical and basic orthopaedic research. A special highlight was the keynote lecture held by Prof. Dennis E. Discher from the University of Pennsylvania. His talk about matrix mechanobiology and mesenchymal stem cell fate pointed out the importance of using matrices and polymers with appropriate stiffness to mimic the natural environment for different cell types within the musculoskeletal system. Further, it is our pleasure to announce that Yvonne Haegele, PhD student from Prof. Anita Ignatius' lab was awarded with the Young Investigators Award for the best oral biological presentation at the EORS 2017. She presented her work investigating the interplay of the complement receptor C5aR and the toll-like receptor TLR2 on bone cells within an inflammatory environment.

### *17<sup>th</sup> Meeting of the European Shock Society September 13<sup>th</sup>-15<sup>th</sup>, 2017*

The primary objective of the European Shock Society is to advance the understanding of the pathophysiology but also the treatment of shock, trauma and sepsis. For the first time since the founding of the European Shock Society 33 years ago, the conference was held in Paris, France.

Three "premières" happened:

- 1) For the first time, a student-oriented "Sepsis Summer School" (SSS) was organized based on the initiative of Markus Huber-Lang (the newly President of the ESS). Its general topic was "sepsis", and the SSS was held during the "World Sepsis Day".
- 2) For the first time ever, a joint session with the Chinese Shock Society was organized.
- 3) Also, a joint session with the US Shock Society was organized.

A special highlight was the lecture held by Prof. Mervyn Singer from the University College of London. His talk about the most recent sepsis definitions pointed out that although the new sepsis definitions offer a more robust characterization, sepsis can be further characterized beyond the current umbrella syndrome covering multiple biological phenotypes. Further, a lot of members of the CRC presented their new results and findings, e.g. members of Prof. Huber-Lang's and Prof. Radermacher's group.

### GEROK announcements

Dr. med. **Evgenia Makrantonaki** holds a **GEROK position** in the lab of **Prof. Dr. med. Karin Scharffetter-Kochanek** at the Department of Dermatology and Allergology. The aim of her project entitled "*breaking epidermal stem cell quiescence in cutaneous wound healing after chest trauma*" is to elucidate the role of IGF-I. However, she is also focusing on already known factors released after chest trauma in overcoming stem cell quiescence and enhancing re-epithelization in cutaneous wound healing with preceding chest trauma as compared to normal wound healing.

In addition, she plans to investigate to which extent the switch from quiescent to progenitor state in epidermal stem cells is due to regulation of fzd7 expression, a Wnt signaling receptor. In order to elucidate the role of fzd7 expression and how its expression correlates with stem cell activation upon trauma, a pTRE-fzd7 + K5tTA mouse model will be established. These findings seek to understand the role of Wnt signaling and in particular of fzd7 in epidermal stem cell biology as well as the wound healing process and may help to better understand the observation of accelerated wound healing upon chest trauma probably through activation of Wnt signaling in epidermal stem cells.

Further GEROK positions are held by Dr. med. **Janine Hansmann** working in the lab of **Prof. Dr. med. Meinrad Beer** at the Department of Diagnostic and Interventional Radiology and Dr. med. **Alexander von Zelewski** working in **PD Dr. med. Miriam Kalbitz's** lab at the department of Trauma Surgery

Also, Dr. med. **Christiana Graf** holds a **GEROK position** in the lab of **Prof. Dr. med. Thomas Seufferlein** at the department of Internal Medicine I. The aim of the project is to investigate protein markers and micro RNA content of mouse serum exosomes after polytrauma, septic and hemorrhagic shock in order to identify targets that could be relevant for the regulation of barrier integrity.

### Awards

The paper "**Mast cells are critical regulators of bone fracture-induced inflammation and osteoclast formation and activity**" authored by **Jochen Kroner, Anna Kovtun, Julia Kemmler, Joanna J. Messmann, Gudrun Strauss, Sebastian Seitz, Thorsten Schinke, Michael Amling, Johanna Kotrba, Jan Dudeck, Anne Dudeck and Anita Ignatius** was considered as a **Highlight Paper** in the **Journal of Bone and Mineral Research**.

*Congratulations to the authors!*

The paper "**Complement C5a Functions as a Master Switch for the pH Balance in Neutrophils Exerting Fundamental Immunometabolic Effects**" authored by **Denk S, Neher MD, Messerer DAC, Wiegner R, Nilsson B, Rittirsch D, Nilsson-Ekdahl K, Weckbach S, Ignatius A, Kalbitz M, Gebhard F, Weiss ME, Vogt J, Radermacher P, Köhl J, Lambris JD, and Huber-Lang MS** has been published in the **Journal of**

**Immunology** (2017 Jun 15;198(12):4846-4854). It was considered to be among the **TOP 10%** of articles published in the journal and mentioned in the **highlights section** of the June 2017 issue.

***Congratulations to the authors!***

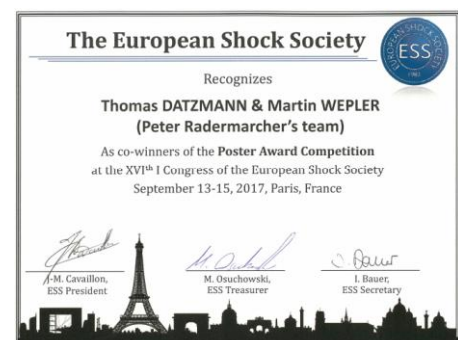
We congratulate **Prof. Holger Barth** on his nomination for the **2017 award as best lecturer of both SS 2017 and WS 2016/2017** for his reading **"Toxicology"** in the bachelor's and master's degree **"Molecular Medicine"** of the **University of Tübingen**. This lecture also contains aspects of trauma toxicology, so there is a direct reference to SFB1149. Prof. Barth is a co-opted member of the Faculty of Medicine at the University of Tübingen.

He is in charge of a module for **"Pharmacology and Toxicology"** at the **Molecular Medicine Program in Tübingen**.



***Congratulations to Prof. Barth!***

At the **17<sup>th</sup> Meeting of the European Shock Society in Paris in September 2017** two poster presentations from the Institute for Anesthesiological Pathophysiology and Process Engineering from **Prof. Dr. Dr. Peter Radermacher** by **Dr. med. Thomas Datzmann** and **Dr. med. Martin Wepler** were recognized as **co-winners of the Poster Award Completion!**



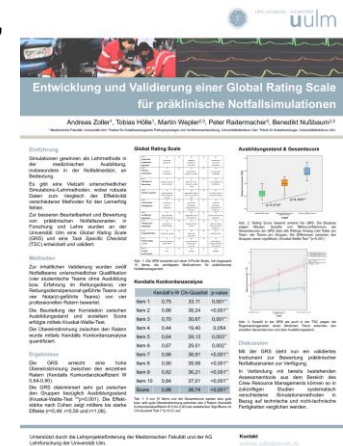
**Dr. Sabine Vettoazzi** from the Institute of Comparative Molecular Endocrinology from Prof. Dr. Jan Tuckermann was recognized as a **finalist of the New Investigator Award Competition** for her work **"resolution of acute lung injury depends on the synergistic action of inflammatory signaling and glucocorticoids"** and also got a **Travel Award over 500EUR!**



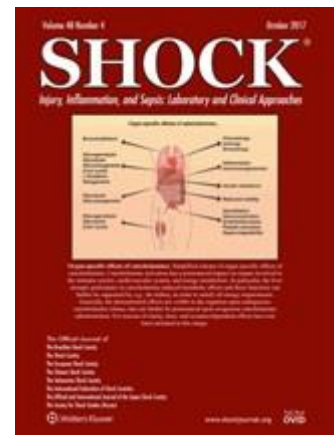
**Congratulations to the award winners!**

At the InSiM 2017 in Dresden from October 12th to October 14th, the work from **Andreas Zoller, Tobias Hölle, Martin Wepler, Peter Radermacher, and Benedikt Nußbaum** from the Faculty for Medical Studies, the Department of clinical Anesthesiology and the Institute for Anesthesiological Pathophysiology and Process Engineering about the “development and validation of a global rating scale for pre-clinical simulation of emergency medicine” made it to the **third place of the Poster Award Competition!**

**Congratulations to the award winners!**



In the peer-reviewed **Shock Journal** a review article authored by **Clair Hartmann, Benedikt Nußbaum, Enrico Calzia, Peter Radermacher, and Martin Wepler** from the CRC group about “non-hemodynamic effects of catecholamines” raised a special interest. One of the figures from this article made it to the **title page of the current issue** (October 2017)!



**The CRC congratulates the winners most warmly for their excellent work!**

### Upcoming Meetings and deadlines

The **6th CRC Retreat** will take place on **13th November 2017**.

Location: Ulmer Flieger (<http://www.ulmerflieger.de>)  
 We are looking forward to seeing you all there for presentation of the projects of the 2nd funding period and for final discussion.



### DFG Deadline for pre-proposal for projects for the 2nd Funding Period

Internal deadline for revised abstracts, CV and list of publications of projects selected for the 2nd funding period was September 15th, 2017 and abstracts have been submitted to the CRC already. **Internal deadline** for the final version of the abstracts, the general part of the pre-proposal, and finalization of the document is November 15th, 2017.

The **DFG Deadline for pre-proposal** is November 30th, 2017. The pre-proposal is used only by the DFG for reviewer selection. **Application deadline: November 30th, 2017**. Please find instructions for the application on the CRC 1149 homepage: <http://www.uni-ulm.de/einrichtungen/sfb-1149>

**Next seminar series 2017:**

**27. SFB Seminar**

November 16<sup>th</sup> 2017

16:00 "Bacterial toxins: from novel mechanisms to pharmacological exploitation"  
Prof. Dr. Holger Barth  
N27 Multimedia

**Selected New Publications**

Hartmann C, Loconte M, Antonucci E, Holzhauser M, Hölle T, Katzsch D, Merz T, McCook O, Wachter U, Vogt JA, Hoffmann A, Wepler M, Gröger M, Matejovic M, Calzia E, Georgieff M, Asfar P, Radermacher P, Nussbaum BL. Effects of Hyperoxia During Resuscitation From Hemorrhagic Shock in Swine With Preexisting Coronary Artery Disease. *Crit Care Med.* 2017 Oct 12. doi: 10.1097/CCM.0000000000002767. [Epub ahead of print].

Galuppo P, Vettorazzi S, Hövelmann J, Scholz CJ, Tuckermann JP, Bauersachs J, Fraccarollo D. The glucocorticoid receptor in monocyte-derived macrophages is critical for cardiac infarct repair and remodeling. *FASEB J.* 2017 Aug 2. pii: fj.201700317R. doi: 10.1096/fj.201700317R.

Hartmann C, Nußbaum B, Calzia E, Radermacher P, Wepler M. Gaseous Mediators and Mitochondrial Function: The Future of Pharmacologically Induced Suspended Animation? *Front. Physiol.*, 19 September 2017  
<https://doi.org/10.3389/fphys.2017.00691>

Chandrasekar A, Heuvel FO, Palmer A, Linkus B, Ludolph AC, Boeckers TM, Relja B, Huber-Lang M, Roselli F. Acute ethanol administration results in a protective cytokine and neuroinflammatory profile in traumatic brain injury. *Int Immunopharmacol* 2017 Oct; 51:66-75. doi: 10.1016/j.intimp.2017.08.002. Epub 2017 Aug 12.

Fischer V, Haffner-Luntzer M, Prystaz K, Scheidt AV, Busse B, Schinke T, Amling M, Ignatius A. Calcium and vitamin-D deficiency marginally impairs fracture healing but aggravates posttraumatic bone loss in osteoporotic mice. *Sci Rep.* 2017 Aug 3;7(1):7223. doi: 10.1038/s41598-017-07511-2.

Fattahi F, Kalbitz M, Malan EA, Abe E, Jajou L, Huber-Lang MS, Bosmann M, Russell MW, Zetoune FS, Ward PA. Complement-induced activation of MAPKs and Akt during sepsis: role in cardiac dysfunction. *FASEB J.* 2017 Sep;31(9):4129-4139. doi: 10.1096/fj.201700140R. Epub 2017 Jun 1.

Kalbitz M, Waller C, Huber-Lang M, Gebhard F, Thiemermann C, Radermacher P. Oxygen in the Heart: How Much is too Much? *Shock.* 2017 Apr;47(4):531-532. doi: 10.1097/SHK.0000000000000760.

Denk S, Neher MD, Messerer DAC, Wiegner R, Nilsson B, Rittirsch D, Nilsson-Ekdahl K, Weckbach S, Ignatius A, Kalbitz M, Gebhard F, Weiss ME, Vogt J, Radermacher P, Köhl J, Lambris JD, Huber-Lang MS. Complement C5a Functions as a Master Switch for the pH Balance in Neutrophils Exerting Fundamental Immunometabolic Effects. *J Immunol.* 2017 Jun 15;198(12):4846-4854. doi: 10.4049/jimmunol.1700393. Epub 2017 May 10.