



Press release

Lohmann & Rauscher Symposium in Vienna

**Spotlight on biofilm: Diagnosis and treatment options**

**Rengsdorf/Vienna, 13 November 2017 – A key factor in the management of chronic wounds is the issue of biofilm. To better research biofilm and the development of effective solutions for combating it, Lohmann & Rauscher (L&R) has invested in expanding the microbiological laboratory in Schönau an der Triesting, Austria. Additionally, on 25 October 2017, L&R – together with international experts – addressed the problem of biofilm at the symposium “Scientific Spotlight – One step closer to managing biofilm in chronic wounds. L&R biofilm research facility drives antimicrobial product technologies”. In addition to attending five sessions and learning from experts about the latest research on biofilm in general, and about their work on this topic specifically, participants were given a virtual tour of the new laboratory.**

One of the symposium's main topics was the need for new methods of diagnosing and treating biofilms. A major obstacle to this is the high variability of model systems and their significance. That being said, the positive properties of the microbiome for human health were also covered. The common goal is the development of products and therapies that address biofilms in chronic wounds. The basis for this are sound laboratory models that provide clinical evidence for developing product solutions.

**“The microbiome in, on and around us – or the importance of a healthy (indoor) microbiome”**

After the opening remarks by Dipl.-Ing. Wolfgang Süssle (CEO & President, L&R), which were followed by a brief introduction by Dr. Christian Rohrer (Director Research & Development, L&R), Prof. Christine Moissl-Eichinger of Graz Medical University gave a talk entitled “The microbiome in, on and around us – or the importance of a healthy (indoor) microbiome”. In it, she discussed the importance of a balanced microbiome (the totality of all microorganisms colonised in a person) for human health. She emphasised the positive



effects of microorganisms and their symbiotic relationship with the human body. For example, microorganisms are essential for digestion, producing bioactive substances and shoring up the immune system. In her opinion, everyone has their own individual microbiome, which is determined by interaction with the body, but also by the immediate home environment. She notes that this is a problem in particular for immunocompromised individuals because they are exposed to a very reduced microbiome due to strict hygiene measures. In addition, these strict hygiene measures may lead to tolerances to antibiotics and disinfectants developing, and to further complications.

In summary, the household microbiome is a critical factor for maintaining a healthy microbiome for patients and it should also be monitored in medical facilities through monitoring and protective checks, according to Prof. Moissl-Eichinger.

#### **“Biofilm: Six questions to answer one question – do they matter?”**

The talk “Biofilm: Six questions to answer one question – do they matter?” given by Dr. Georgina Gethin from the National University of Ireland (NUI) in Galway focussed on the challenges of developing methods for diagnosing biofilms. She stressed that, before satisfactory test methods could be developed, there first need to be better ways to treat biofilms. In this connection, she referred to the six “w” questions (who? when? what? where? why? and how?), which need to be answered in terms of treatments for biofilm.

She also discussed several requirements the new test methods must meet. They should be reproducible, accurate, reliable, feasible and viable and should not disregard any side effects. Meeting all of these requirements would nevertheless be a big challenge in her opinion.

#### **“Biofilm – scientific evidence and characteristics in wounds”**

Prof. Thomas Bjarnsholt, of the Department of Clinical Microbiology at the University of Copenhagen, Denmark, discussed the medical issues related to biofilms in his talk “Biofilm – scientific evidence and characteristics in wounds”. Biofilm plays a key role not only in chronic infections but also in chronic wounds. He explained that although a biofilm is detectable in only 80% of chronic wounds, he assumes that they are present in all chronic wounds and these wounds should also be treated accordingly.



The problem with biofilms, in his opinion, is one of tolerance, both to the body's own immune response and to antimicrobial treatments. As the previous speaker had mentioned, he also emphasised that there is a need for developing new types of treatments to remedy this problem.

#### **“Classic methods to characterize antimicrobial products – limitations and problems”**

In the next talk, “Classic methods to characterize antimicrobial products – limitations and problems”, Dr. rer. nat. Cornelia Wiegand from the Jena University Hospital compared the significance of model systems for biofilms. She highlighted primarily the contradictory nature of published studies, which can be explained by the selection of different model systems. For example, in her view, the findings of these studies are contingent upon the test method, the investigated microorganisms, the extraction method, the solubility and the diffusion properties of the tested substances. In relation to this, Dr. Wiegand discussed a study in which the antimicrobial activity of silver-containing wound dressings was tested using different analytical methods and on different microorganisms, with significant differences being identified in terms of their efficacy. She mentioned the incubation time, the starting concentration of the bacteria as well as their physiological condition and the nutrient concentrations as critical factors for *in vitro* test methods.

#### **“Models to study biofilms – *in vivo* and *in vitro*”**

In the last session, Prof. Tom Coenye from the University of Ghent in Belgium discussed the selection of model systems when developing new forms of treatment in his talk “Models to study biofilms – *in vivo* and *in vitro*”. He first explained the necessity of model systems for getting a better understanding of the formation and tolerances and resistances of biofilms. Then the efficacy of antimicrobial products can be investigated on the basis of these systems. “Model systems are essential for developing new antimicrobial products,” explained Prof. Coenye. “But there is a great deal of variability in the significance of *in vitro* and *in vivo* systems, which absolutely must be factored in when interpreting the data.”

Following the presentations, the participants were given a comprehensive overview of the expansions to and the new opportunities afforded by the new L&R microbiology laboratory during a virtual tour of the facility.



In conclusion, the symposium highlighted the essential role of microorganisms for human health. The relevance of bacteria comes into play specifically in the treatment of chronic wounds because chronic wounds could contain biofilms and should be treated accordingly. That being said, model systems for investigating biofilm vary widely in terms of their characteristics and results. "Establishing new methods is really key for the future and we at L&R would like to be involved in this. In this process, the evaluation of new model systems remains a challenge, but is indispensable for optimised treatment of biofilm", noted Dr. Rohrer in summary.

### **Lohmann & Rauscher**

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### **Press contact:**

Lohmann & Rauscher International GmbH & Co. KG  
Public Relations  
Sabrina Klein  
Johann-Schorsch-Gasse 4 | 1140 Wien  
Tel.: +43 1 57670-386 | Fax DW: 9386  
E-Mail: [Sabrina.Klein@at.LRmed.com](mailto:Sabrina.Klein@at.LRmed.com)



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## Artwork

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**Caption:** Prof. Thomas Bjarnholt discusses the medical problem posed by biofilms and the need for developing new types of treatments.



**Caption:** Experts discuss the essential role of microorganisms in human health.



**Caption:** Prof. Coenye talks about the selection of model systems when developing new types of treatments.



**Caption:** Lohmann & Rauscher invests in the expansion of the microbiological laboratory in Schönau an der Triesting to better research biofilm and to develop effective solutions to combat it.