

**Clinical Toxicology in Homburg: Mass Spectrometry Brings Together  
Or  
Clinical Toxicology in Homburg: Hans Maurer Brings Together**

**3<sup>rd</sup> December 2010 at the Occasion of the 60<sup>th</sup> Birthday of Prof. Dr. Dr. h. c. Hans H. Maurer**

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\* For the Organizing Committee and all former and current co-workers

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H. H. Maurer

This very special mass spectrometry symposium took place at the Saarland University in Homburg/Saar, Germany to celebrate the 60<sup>th</sup> birthday of Hans H. Maurer and its outstanding achievements in clinical and forensic toxicology. The meeting had been organized by Maurer's former coworkers, Frank T. Peters, Jena (Germany), and Thomas Kraemer, Zurich (Switzerland) together with a local organizing committee made up of Maurer's current coworkers. It was

held under the auspices of the German Society of Toxicological and Forensic Chemistry (GTFCh), the International Association of Forensic Toxicologists (TIAFT), and the International Association for Therapeutic Drug Monitoring and Clinical Toxicology (IATDMCT). The symposium covered nearly all "hot" topics of mass spectrometry ranging from drug monitoring to doping control. Over 200 delegates from all over the world joined the event.

The scientific part of the meeting started with a presentation by Olaf Drummer, Melbourne (Australia), current president of TIAFT, who talked about "Mass Spectrometry in Forensic Toxicology". Focusing on papers published by Hans H. Maurer and his coworkers, he highlighted the achievements of Maurer's team in the fields of systematic toxicologic analysis, toxicokinetics and metabolism of designer drugs, method validation, and analysis of alkaloids in biological samples. During his presentation he surprised Prof. Maurer by announcing that a review paper on the latter topic co-authored by Hans Maurer, Olaf Drummer, and Maurer's former coworker Jochen Beyer had won the 2010 best literature review award by the [Australian] National Institute of Forensic Sciences and handed over the awards certificate.

The next talk entitled "High-Resolution Mass Spectrometry in Clinical and Forensic Toxicology" was given by Ilkka Ojanpera, Helsinki (Finland), one of the pioneers evaluating the potential of high-resolution mass spectrometry (HRMS) for toxicological screening in forensic toxicology. He not only addressed key aspects such as the impact of mass spectrometric resolution, isotopic patterns, qualifier ions, and retention times on compound identification, but also demonstrated how HRMS may help to identify unknown peaks observed in routine casework. Altogether, Ilkka Ojanpera convincingly showed that there are great perspectives for HRMS in clinical and forensic toxicology.

The next speaker, Pierre Marquet, Limoges (France), president-elect of IATDMCT, covered the topic of "Mass Spectrometry in Therapeutic Drug Monitoring (TDM)". He described how LC-MS/MS is increasingly replacing immunoassays for the quantification of drugs in blood samples and that it has become the most important technique for analysis of immunosuppressants, antifungals, antiretrovirals, and antidepressants. However, he also stressed that an appropriate sample preparation is very important even when using highly sensitive triple-quadrupole instrument. At the end of his presentation, Pierre Marquet addressed the potential of dried blood spots as a new sample matrix in TDM. Such spots can be sampled by the patients at home and mailed to the laboratory or physician streamlining the sampling process.

The next presentation was given by Gerard Hopfgartner, Geneva (Switzerland). Being entitled "Mass spectrometry - A tool for the identification and quantification of pharmaceuticals and their metabolites in complex matrices and more!", it took the audience to the cutting edge of mass spectrometric applications in bioanalysis. Gerard Hopfgartner showed how combinations of HRMS and new ways of software assisted spectra interpretation may be used for more efficient simultaneous metabolite identification and quantification. He further illustrated how hyphenation with differential mobility spectrometry adds another analytical dimension allowing better separation of co-eluting isobaric compounds. At the end of his talk he showed first results of a cooperation project with Thomas Kraemer, in which ultrafast MALDI scanning coupled to a triple quadrupole MS instrument was used to directly determine drugs in tissue slices, a technique that is certainly of interest in forensic toxicology.

The first session was closed by the presentation of Willy Lambert, Gent (Belgium) on "Mass Spectrometry in Biotechnology". Willy Lambert reported about the use of LC-MS/MS for determination of folic acid and related compounds in rice. He explained the difficulties of developing a sample preparation method capable of extracting folates from the complex rice matrix but being "mild" enough to prevent degradation of the fairly unstable analytes. The final LC-MS/MS method was applicable for determination of six different folates and used in a study on folate levels in biofortified rice overexpressing genes encoding different enzymes involved in folate synthesis. In the end, LC-MS/MS proved to be pivotal for demonstrating the effects of gene overexpression which lead to much higher folate levels in the respective rice strains.

After the coffee break with a delicious cake buffet, the symposium was continued with the talk of Marilyn Huestis, Baltimore MD (USA) on the role of "Advances in the Identification of *In Utero* Drug Exposure & Relationship to Neonatal Outcomes". Marilyn Huestis explained the importance of reliable and sensitive analytical methods for identifying in utero drug exposure and that LC-MS/MS analysis of meconium is the method of choice for such applications. She explicitly pointed out the need to identify the most appropriate biomarker of particular drugs in meconium, because this will not necessarily be the parent compound as illustrated for the examples nicotine and methamphetamine. Once appropriate analytical methods have been established these can be used to study the relationship between the concentrations of particular drugs in meconium and their potential correlation with neonatal outcome as exemplified in Marilyn Huestis' talk.

The last presentation of the scientific part was given by Mario Thevis, Cologne (Germany), talking on the application of "Mass Spectrometry in Doping Control" in his own inimitable manner. He covered LC-MS-based analysis of many different doping agents including macromolecules such as hydroxyethylstarch, siRNA, and erythropoietin, the peptide hormone gonadorelin, the steroid hormone trenbolone, so-called EPO-mimetics, and the so-called rycal S-107. In between he explained the mechanisms of action and gave real case examples.

The last session was dedicated to Hans Maurer himself. Marilyn Huestis opened this part of the day with her outstanding laudatory speech “Mass Spectrometry in Homburg”. Sketching Hans Maurer as a Harry Potter-like wizard, who was hidden in Homburg, she followed the steps of his education from early childhood through his school and university years in Homburg and Saarbrücken, respectively, his time as a PhD student of Prof. Dr. Karl Pflieger, his habilitation and promotion to the head of department. She acknowledged his achievements at many scientific conferences and the high quality of his publications, which earned him the prestigious Irving Sunshine and Allan Curry Awards as well as an honorary doctorate from the University of Gent. Of course Marilyn Huestis did not forget to mention Prof. Maurer’s great abilities as teacher and scientific father, as reflected by the numerous awards members of his team have accumulated over the years.



H. H. Maurer K. Pflieger A. Weber

In additional addresses, Volker Linneweber, president of the Saarland University, Frank Musshoff, president of GTFCh, Olaf Drummer, president of TIAFT, and Pierre Marquet, president-elect of IATDMCT, acknowledged Maurer’s untiring contributions and efforts as a university professor, board member and treasurer of GTFCh, board member of TIAFT, as well as board member and past president of IATDMCT.

Finally Hans Maurer himself took to the stage and closed the meeting with an emotional speech,



Claudia Christine Hans Johannes Maurer



thanksgiving his colleagues, guests, friends, and family for all the support he had received over the years. Afterwards, the symposium was continued with a reception and dinner at

the hospital restaurant (Casino). The musical background of the evening was provided by Hans Maurer’s children, Christine and Johannes Maurer, together with their music teacher Hans-Jürgen Geiger.



There was also the time for the former and current coworkers of Hans H. Maurer to thank him for his support in the typical Homburg way. Thomas Krämer presented the “Hans Maurer – Laudatory Speech, The Off-The-Record Version” and Frank Peters and Markus R. Meyer reflected on further “secret” and evident facets of Maurer’s character. Then the scientific life of Hans Maurer was brought back into focus when he had to sort characteristic symbols to each of his former and current PhD and MD students. That being successfully achieved, he could finally relax.



H. H. Maurer surrounded by his co-workers, PhD and MD students



T. Krämer

H. H. Maurer

F. Peters

The Organizing Committee and Hans H. Maurer would like to thank all the participants, speakers, and exhibitors for taking part in this symposium on the occasion of Maurer’s 60th birthday.

Fotos: Manfred Erkens, Aachen