



# NEWS

Letter

European Federation for Pharmaceutical Sciences Vol 18 No1 May 2009

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## Lay-out

Camilla Boquist  
Lådan & Co, Stockholm

## Report on the EUFEPS-TI Pharma workshop

# Bottlenecks identification in Drug Discovery ... And solutions please!

Large increases in the costs of drug discovery and NCE development have diminished the rewards for investment in the industry. Demand for such discovery and development, however, has intensified. But despite large financial investments and revolutionary discoveries in fundamental research, the number of approved drugs has diminished in recent years. The declining number of new molecular entities (NMEs) approved for the treatment of disease affects patients as well as the pharmaceutical industry. The need for change has been stressed in reports from both the FDA and EMEA, including "Innovation or Stagnation" and "Roadmap to 2010". At the EUFEPS-TI Pharma workshop "Bottlenecks identification in Drug Discovery ... And solutions please!", technical solutions to improve drug efficacy and safety were discussed.

Ton Rijnders (Schering-Plough) began the workshop with an introduction to the issue at hand. Nowadays, costs for drug development amount to an average USD 1.6 billion because increased investments are not matched by an increase in the number of new drug releases. In fact, as highlighted by Dennis Smith (Pfizer), the productivity of Pharma in terms of new molecular entity output has remained constant at 20 NMEs/yr over the last 50 years. Such large investment need forces the pharmaceutical sector into cost-driven decision making, when effort should actually be focused on innovative research. Innovative research would increase the number of better quality compounds through incremental improvement. It would also improve drug efficacy and safety through better translation from, and knowledge exchange between, fundamental research in the discovery phase and preclinical and clinical research. Collaborations between academia, SMEs and industry, like TI Pharma, are essential for such innovation.

Following the introductory lecture, the subsequent

lectures presented innovative approaches to solving bottlenecks in drug discovery. Hugo Kubinyi maintained that innovation has indeed brought many solutions. Today, however, we are faced with a need to produce compounds with an ever-increasing list of properties. Whether such long lists are necessary is debatable, as poorly selective but nevertheless highly efficacious drugs show. In fact, side effects can be exploited to develop related compounds for various disease areas. Careful application and understanding of applied filters in candidate selection in lead identification and the optimization phase may increase efficiency. There is great potential in gene technology as well, both to provide human proteins for testing as well as for patient population selection for clinical trials and treatment.

To design better compounds beyond the existing chemical space, Iwan de Esch (Free University of Amsterdam) illustrated the promising approach of fragment-based drug discovery. Through in vitro or in silico experiments, this method identifies favorable interactions between small fragments and a target. Fragments displaying such favorable interactions are subsequently linked or extended to yield novel molecules which address as yet unexplored chemical space.

Improvements in the area of target discovery were addressed by Barbara Bakker (Free University of Amsterdam) and David Fischer (Biofocus DPI, a Galapagos company). Barbara demonstrated the successful application of a systems biology approach to predict novel targets for the treatment of African sleeping sickness. The strength of this method lies in the integrative model which accounts for feedback and feed forward as well as for compartmentalization differences which go unnoticed in the study of isolated pathways. Such complex networks underlie most, even >>>

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monogenetic, diseases. To cure diseases, one should therefore cure the network. This requires dealing with the network.

David Fischer presented a target discovery platform based on primary human cells derived from patients or non-disease controls. These cells are subjected to knock-down (shRNA) and over expression (cDNA) strategies to validate involvement of a target. This platform was successfully applied and validated to identify relevant drug targets as well as NMEs in many disease areas, including rheumatoid arthritis (RA) and cystic fibrosis (CFTR).

Compromised safety is the main reason for drug development failures. Currently, however, the formation of reactive metabolites halts additional research on potentially highly efficacious compounds. Therefore Emre Isin (Astra-Zeneca) argued that one might consider ranking compounds based on reactive metabolite formation and to include this information in decision-making criteria such as unmet medical need, life threatening potential, vulnerability of the target population, and length of treatment.

A second presentation involving ADMET was given by Dennis Smith (Pfizer). This presentation included an alternative model to the Lipinski's rule of five. This model applies not only to highly permeable molecules which represent the successful drugs we currently have, but also to the poorly permeable ones which are required to address targets with exposed interaction sites.

Oscar Della Pasqua (GSK) concluded the lecture series with a plea to integrate basic theoretical pharmacology knowledge into drug development. Through the implementation of

mechanism-based computer models, experiments can address such issues as optimal dosing, preclinical to clinical translation and long-term treatment benefits. Among the examples Oscar gave was a pharmacological explanation for the disastrous TGN1412 case which led to casualties in an early clinical trial. The administered dose of this monoclonal super agonist was determined based on a standard 500x safety margin from animal to man extrapolation. However, integration of basic concepts in pharmacology and pharmacokinetics indicate that at this dose >90% receptor occupancy is achieved, which is unthinkable as exposure for a compound with agonistic properties. Ethical requirements dictate that first-in-man experiments should be carried out with a dose showing no observable pharmacological effect and thus, minor receptor occupancy. Calculations show that even a 100-fold lower dose than what was administered would have resulted in 8% receptor occupancy. Following these presentations, the presenters from industry and academia, together with workshop participants, discussed improvement suggestions from both sides. Five groups were formed, with the presenters rotating between them. Interestingly, many similar themes arose in these roundtable talks:

1) *Biomarkers:*

- Validation of the relationship between biomarker and relevant endpoint is essential
- Knowledge gained from toxicity biomarkers and encountered side effects may yield treatment opportunities for other diseases

2) *Role of patient (organisation):*

- Involving patients in discussions on risk

acceptance may facilitate market release of new molecular entities under specific conditions

- Patient foundations should be included in discussions on drug development in general

3) *Education:*

- Academia and industry should join forces to educate stakeholders, including regulatory authorities both at the R&D and managerial levels

4) *Approach and business model:*

- Drug development should be based on an understanding of the relevant pharmacological principles of the disease, yielding a mechanism-based modeling or simulation approach
- Further research should indicate the added value of systems biology approaches for acute, monogenic diseases or the more demanding, complex, chronic diseases
- Multifaceted interaction between academia, SMEs and large pharmaceutical companies are needed, where academia may shed light on as yet unexplored research areas. Such a collaborative and integrated approach will also improve translation from *in vitro* to animal models and disease. Public private partnerships (PPPs) provide a business model which facilitates such interaction. Moreover, PPPs are instrumental in increased data exchange, which is much needed but challenged by IP sensitivity issues

More information about the workshop can be found on [www.tipharma.com](http://www.tipharma.com)

By Margot Beukers

(Leiden/Amsterdam Center for Drug Research)

## Progress Report EUFEPS European Research Network Pharmacogenetics/Genomics

The EUFEPS European Research Network Pharmacogenetics/Genomics now has approximately 80 registered members.

### Projects

The Network has established one EU-founded research project (EU-PACT Pharmacogenomics approach to Coumarin Therapy). Furthermore, there is an active group within the network that is discussing the possibility of setting up a European Biobank for Adverse Drug Reactions together with the pharmaceutical industry. This is because drug safety continues to be an enduring problem for both the pharmaceutical industry and healthcare systems. Prevention of adverse reactions for drugs on the market would be highly beneficial for patients, governments and drug manufacturers.

Moreover, safety issues play an important role in drug development. Knowing which genes or which drug characteristics play a role in, for example, drug-induced liver injuries or cardiotoxicity will be of utmost importance in compound selection for the drug development process.

### BioBank Conference

Studying the pharmacogenetic background of adverse drug reactions would require a "biobank" of a large number of samples. The patient population needed will never be found in one European country. Without doubt, extended collaboration will be a prerequisite and of utmost importance for establishment of a European Drug Safety Biobank. Therefore the Network is organising a Conference to share visions from

both academia and industry on biobanking and pharmacogenetics research, as well as on the collaboration needed. The conference will present and discuss initiatives on future biobanking in pharmacogenetics.

The conference will be held in Stockley Park (near Heathrow Airport), UK, on April 23-24, 2009. If you are interested in this conference, contact Anke-Hilse Maitland-van der Zee (a.h.maitland@uu.nl) or Hans H. Linden (hans.linden@eufeps.org).

Anke-Hilse Maitland-van der Zee (Chair)  
and Hans H. Linden (EUFEPS)



2<sup>nd</sup>

# PHARMSciFAIR

*Premier European Platform for Advancing Pharmaceutical Sciences*

June 8-12 • 2009 • Nice • France



### *The PharmSciFair*

is the premier European Platform for Advancing Pharmaceutical Sciences, initiated by EUFEPS. This became absolutely clear during the first PharmSciFair in 2005, where 26 National and International organisations in Pharmaceutical Sciences joined together. More than 700 scientists, coming from all pharmaceutical disciplines, contributed and set up a truly interdisciplinary meeting of the highest standard. The meeting was accompanied by a comprehensive exhibition.

### *The Scientific Programme*

Commitments to the 2009 event include 40+ organisations. An exciting programme has been set up, which promises up-to-date presentations of front line pharmaceutical research and development. In addition to 6-8 parallel Invited Speaker Sessions, over 400 abstracts have been submitted and processed for Short Communications and Posters. The preliminary programme is constantly updated – and there will be a final one available soon. For all information, consult the PharmSciFair Website at: [www.pharmscifair.org](http://www.pharmscifair.org)

### *The Careers Forum*

is there to provide an opportunity for companies, institutions and other organisations to meet with candidates, and to interview them at PharmSci Fair. These opportunities will principally be of great interest to graduate students, and to those in the early stages of their professional careers in industry. It is anticipated that there will be opportunities available within a variety of scientific disciplines, including chemistry, biology, physics and informatics. Please visit the Careers Forum Website at: [www.careersforum.org](http://www.careersforum.org) for details!

### *The Exhibition*

will take place over three days - on the Tuesday, Wednesday and Thursday – and will once again feature key players from the European Pharmaceutical Industry and beyond, as well as leading international companies from the supply chain. There will also be a number of PharmSciFair Programme Providing Partner Stands. Poster sessions, with new posters each day, and catering places will be in the Exhibition area. For floor-plan and rates etc., access: [www.healthlinks-events.co.uk/pharmsci2009.htm](http://www.healthlinks-events.co.uk/pharmsci2009.htm)

### *The 2009 PharmSciFair Young Scientists Meeting*

will be organized as a pre-satellite meeting, and for young scientists. It is open to our next generation of pharmaceutical scientists. PhD students and postdoctoral fellows will convene in Nice to exchange ideas and discuss the latest developments in pharmaceutical sciences. For progress and programme, visit the Website at: [www.apgi.org/presatellitePharmSciFair/](http://www.apgi.org/presatellitePharmSciFair/)

### *You*

should be there, of course.

### *We'd like to introduce you to the global arm of AAPS Career Services at PharmSciFair.*

We understand how international recruitment has become a growing necessity among biotech and pharmaceutical companies. While the worldwide labor force has increasingly come to the United States for education, competition for qualified candidates has increased dramatically with developing countries creating even greater opportunities for employment in the life sciences.

The Careers Forum will provide an opportunity for companies, institutions and other organizations to meet with candidates, and to interview them at PharmSciFair. These opportunities will principally be of great interest to graduate students, those in

the early stages of their professional careers in industry and to others. It is anticipated that there will be opportunities available for other Life Science disciplines as well, including e.g. chemistry, biology, physics and informatics.

Careers Forum will make its debut at the PharmSciFair, June 9-11 in Nice, France. The PharmSciFair is organized by the European Federation for Pharmaceutical Sciences (EUFEPS) with other partnering organizations spanning the European Community.

Join us as we launch our global initiative this summer in Nice, France!

*Please visit the website at [www.careersforum.org](http://www.careersforum.org) for details!*

[www.pharmscifair.org](http://www.pharmscifair.org)

# 133rd Session of the European Pharmacopoeia Commission Held in Strasbourg

*During its 133rd session, the European Pharmacopoeia Commission adopted 34 monographs and 13 general chapters.*

The European Pharmacopoeia Commission has adopted a new general chapter on the microbiological quality of herbal medicinal products for oral use, which defines the quality of these products according to new categories. It had been reported that the former categories lead to different interpretations from one country to the other. The Commission has adopted a new general chapter on monocyte activation tests: the chapter provides in vitro alternatives to the rabbit pyrogen test and will hopefully contribute to the reduction of use of animal laboratories.

With regard to International Harmonisation, a collaboration undertaken with the United States Pharmacopoeia (USP) and the Japanese Pharmacopoeia (JP), the European

Pharmacopoeia Commission has adopted 5 general methods to be included in Ph. Eur. chapter 5.8 Pharmacopoeial harmonisation, which brings up to 15 the number of methods published in this section of the pharmacopoeia. The chapter refers to equivalent texts published in JP and USP and provides assistance to users willing to employ the methods in the three regions.

Terms of reference for the Heavy Metals Working Party have been adopted.

Since the EU Regulation Directive REACH (Registration, Evaluation, Authorisation and Restriction of Chemical substances) has become operational, the potential impact on the European Pharmacopoeia and its users should be considered. A first inventory has been carried out to identify direct implications on reagents and substances currently used in the European Pharmacopoeia and the Commission will act with the European Chemical Agency (ECHA). In addition, the

Commission will consider the adoption of a general policy in order to avoid the use of potentially hazardous substances in the European Pharmacopoeia.

Similar efforts have been introduced in the past by implementing a general policy in the European Pharmacopoeia concerning the reduction of the use of animal testing in routine quality control with the adoption of the 3Rs policy (Replacement, Reduction and Refinement of animal testing).

The EDQM also informed the Commission that it was the last session in which Dr Randi Winsnes would participate. Dr Susanne Keitel paid tribute to her deep commitment and many contributions to the work of the European Pharmacopoeia as member and Head of the Norwegian delegation, and as a member and President of the European Pharmacopoeia Group of experts on Sera and Vaccines, a position she held for eleven years.



## PSWC2010 – Your programming ideas wanted

**FIP Pharmaceutical Sciences 2010 World Congress, in association with the AAPS Annual Meeting and Exposition**

14-18 November 2010, New Orleans, USA

Every three to four years, the International Pharmaceutical Federation (FIP) organizes a Pharmaceutical Sciences World Congress (PSWC). The PSWC series alternates among the American, Asian, and European continents; the Americas will host the 2010 PSWC.

Each year, the American Association of Pharmaceutical Scientists (AAPS) organizes the AAPS Annual Meeting and Exposition.

In 2010, FIP and AAPS have agreed to hold the PSWC and the AAPS Annual Meeting together in New Orleans, Louisiana, USA from 14–18 November. FIP and AAPS also agree that the objective of this joint meeting should be for the education and benefit of the members of each organization and the constituencies that they represent. The programming, exposition, and other events will provide maximum educational opportunities.

EUFEPS is a co-sponsoring organisation of PSWC2010.

### **The joint meeting will include:**

- A forum for the exchange of ideas and information about the sciences that the

organisations represent

- Continuing professional development for individual members and related professionals
- An introduction of the latest technological advances

The scientific theme is: Improving Global Health Through Advances in Pharmaceutical Sciences. The Scientific Programming Committee is geographically balanced with members from the Americas, Asia, and Europe.

### **Major Program Streams:**

- Analysis and Pharmaceutical Quality
- Biotechnology
- Clinical Pharmacology and Translational Research
- Drug Design and Discovery
- Education and Curriculum
- Environmental Sciences
- Formulation Design and Development
- Manufacturing Science and Engineering
- Medicinal Chemistry and Natural Products
- Pharmacoeconomics and Pharmacovigilance

- Pharmacokinetics, Pharmacodynamics, Drug Metabolism and Transport
- Pharmacology and Biochemistry
- Physical Pharmacy and Biopharmaceutics
- Regulatory Science
- Safety Sciences

You have an important opportunity to get involved in shaping this vital conference.

You can contact the chair of the Europe Scientific Program Committee, Prof. Geoff Tucker, to suggest symposia, workshops and lectures in line with the major program streams listed above.

Alternatively please follow the instructions in the text box below:

#### **PSWC 2010 Programming Submission Site is OPEN!**

Visit, <http://pswc2010.org/>, to submit your programming ideas. Once on the PSWC 2010 website, click on "2010 Event Submission Site". This link will direct you to a landing page that contains detailed instructions on how to submit a proposal. Once you have reviewed the instructions, click on the link provided at the bottom of the page to proceed directly to the event submission website. The programming submission website will be open until June 30, 2009. Please note, all programming must be entered through the submission web site. If you have any questions, please contact Megan Reese at +1 (703) 2484783; email [ReeseM@aaps.org](mailto:ReeseM@aaps.org); or fax: +1 (703) 2435582.

## European Pharmaceutical Scientist, 2009

The jury has chosen Professor Michael Karas from the Johann Wolfgang Goethe-University of Frankfurt, Frankfurt, Germany, as the winner of this year's European Pharmaceutical Scientist award. This prestigious award, given at the Pharmaceutical Sciences Fair (PharmSciFair), recognises major contributions to pharmaceutical sciences in Europe. Professor Karas has been selected for his outstanding achievements in mass spectrometry, related to the analysis of biomolecules by laser-assisted desorption ionization, and more specifically Matrix-assisted Laser Desorption Ionization (MALDI).

In 1985 he published, together with Franz Hillenkamp, results on the behaviour of absorbing and non-absorbing molecules under ultra-violet (UV) laser irradiation. For the first time, they had detected a matrix effect in the field of laser-induced desorption ionisation, finding that previously undetectable, non-absorbing alanine could be desorbed, ionised and detected when co-crystallized with detectable, absorbing tryptophan. They called this method "matrix assisted laser desorption" and described the fully developed method for a wide variety of matrices and analytes. In 1988, they applied the method to proteins above 10,000 daltons in molecular weight.

Matrix-assisted Laser Desorption Ionization (MALDI) as they later called the method has, with electrospray ionisation,

changed the world of mass spectrometry. Many of the far-reaching goals in Systems Biology, Functional Proteomics and Molecular Medicine would be unattainable without MALDI. Michael Karas and Franz Hillenkamp published the first promising results on UV-MALDI more than 20 years ago. During the following years, they have driven improvements and extensions, based on profound, detailed investigations of the underlying physico-chemical mechanisms. Today, Michael Karas and Franz Hillenkamp are amongst the most frequently cited scientists in the field of bioanalytical methods.

Prof. Dr. Michael Karas studied chemistry at the University of Bonn, where he received his PhD in Physical Chemistry in 1982. From 1983 to 1986, he was a postdoc in the group of Franz Hillenkamp at the Institute of Biophysics, University of Frankfurt. In 1987, he joined Franz Hillenkamp at the Institute of Medical Physics and Biophysics within the Medical Faculty at the University of Münster. Starting from 1984, first in Frankfurt and later in Münster, the development of the MALDI technique took place. In 1992, he finalized his Habilitation in Physical Chemistry. He returned to Frankfurt in 1995 as a full professor for Instrumental Analytical Chemistry. In 2001, he switched to the School of Pharmacy and, since then, has been a professor in the Institute of Pharmaceutical Chemistry.



*Prof. Karas will receive his European Pharmaceutical Scientist prize on Monday 8 June 2009, in Nice, during the opening session of PharmSciFair ([www.pharmscifair.org](http://www.pharmscifair.org))*



## EUFEPS contributions recognised

*EUFEPS recognised for its co-sponsorship of the 14th (and earlier) Dubai International Pharmaceuticals & Technologies Conference & Exhibition, on March 29-31, 2009, in Dubai, United Arab Emirates ([www.duphat.ae](http://www.duphat.ae)). From left to right: Qadhi Saeed Al Murooshid, Director General Dubai Health Authority, Hans H. Linden, Executive Director EUFEPS, and Ali Al Sayed Hussain, Chairman DUPHAT 2009, Director Pharmaceutical Services Department, Department of Health & Medical Services, Dubai.*

# *Nanotechnology and Nanomedicines: The smaller the better? Plea for a EUFEPS Network on Nanomedicine*

'Nanotechnology refers to a field of applied science and technology whose theme is the control of matter on the atomic and molecular scale, generally 100 nanometers or smaller, and the fabrication of devices or materials that lie within that size range' (Wikipedia). Nanomedicines are pharmaceutical products (including imaging devices for diagnosis and monitoring) based on nanotechnology.

Examples of first generation nanomedicines are cytostatic agent - liposome combinations. In this category, one can also find oil-in-water emulsions for intravenous injection, colloidal gold suspensions used in the treatment of rheumatoid arthritis and even monoclonal antibodies.

So, nothing new one could think. But, there may be more to come, much more. Combining new materials and new insights e.g. in molecular biology and ontology of diseases generates powerful drivers of these developments. Complex structures are being developed for 'smart' drug delivery: site-specific and time-controlled release of the bioactive agent, which could enhance activity and reduce toxicity. These nanomedicines are based on different structural elements each with its own function essential for targeted delivery of a therapeutic agent. Nothing new for Mother Nature, because viruses are nature's equivalent of this line of thinking. But, we must do better than viruses, e.g. avoiding immune responses and making target cell specific delivery possible. 'Artificial viruses' is the name coined for these systems (Mastrobattista et al., 2006). Groups of modern therapeutics that specifically call for these advanced drug delivery systems are siRNA, microRNA and DNA for gene therapy. The nanotechnology toolbox offers

tools that should improve the performance of these large and highly charged molecules: condense the long strands in nanometer sized aggregates by means of cationic polymers or lipids, neutralise their negative charge and make them attractive for cell entry, attach homing devices for cell specificity and finally provide them with intracellular targeting tools. At the present time these artificial viruses may sound an 'over-the-top' idea of dreamers. But, we make excellent progress on all terrains as said before, both in terms of materials and in terms of insights: where we have to deliver, when and how.

Finally, a new trend is the combination of imaging and therapy. MRI probes are being combined with nanomedicines to monitor and induce – the first examples are being published, involving controlled delivery at target tissue/cell level. This combination blurs the borders between medical interference through drug actions and diagnostic interventions.

In conclusion, nanotechnology provides many opportunities to improve the treatment of patients suffering from serious diseases. Translational, cross-cutting approaches are essential to be successful in the clinic and for the patient: different disciplinary experts ranging from physicist to physician should be involved in the thought processes and ensuing actions to fully exploit the potentials of nanomedicines.

In Europe many reports have been published on nanomedicine such as: 'Nanomedicine, An ESF – European Medical Research Councils (EMRC) Forward Look report (2005)' and 'Nanomedicines, Nanotechnology for Health, a European Technology Platform,

Strategic Research Agenda, November 2006'. Moreover, a number of initiatives have been funded through the ESF and the 7th Framework Programme (MediTrans) and bring together academic and industrial expertise in this area.

These activities were often driven by 'ad hoc' committees of scientists: 'They come and go with the flow'. Isn't it time to have a permanent platform for nanomedicine experts in Europe? I think that there are many good reasons for such an initiative. So why shouldn't there be a Network on Nanomedicine in EUFEPS that gives Nanomedicine experts a platform for discussion and an excellent starting point for stimulating nanomedicine research in Europe. Networks on other topics operate already quite successfully under the aegis of EUFEPS (Bioavailability/equivalence; Pharmacogenetics/genomics; PAT Science; Safety Science). Who takes the initiative?

*Daan JA Crommelin  
EUFEPS President*

• Mastrobattista, E., Aa, M.A.E.M. van der, Hennink, W.E., Crommelin, D.J.A. Artificial viruses: a nanotechnological approach to gene delivery, *Nature Reviews/Drug Discovery*, 5 (2006) 115-121

• Nanomedicine, An ESF – European Medical Research Councils (EMRC) Forward Look report, November 2005 'Nanomedicines, Nanotechnology for Health, a European Technology Platform, Strategic Research Agenda, November 2006'

• MediTrans, [www.meditrans-ip.net/](http://www.meditrans-ip.net/)

## *ESSWAP Whole Animal Pharmacology Summer School - Behavioural Pharmacology Course* June 14-19, 2009, Oss, The Netherlands

### **Who should participate**

Young bio-scientists with 4 to 5 years experience in company or academic pharmacology research.

### **Why participate**

- To extend your knowledge of animal behaviour and behavioural pharmacology
- To improve your experimental skills in behavioural pharmacology

- To apply these skills in the field of genetic phenotyping, drug profiling or safety screening
- To anticipate the trend of using more genetically modified animals to investigate human diseases

### **Programme**

The course comprises seminar sessions and workshops with an emphasis on basic issues,

practical information and optimum student interaction. We also include a day of practicals.

### **Contact**

Summer School Director  
Tel. +31 26 4432329  
Email [director@esswap.org](mailto:director@esswap.org)  
[www.esswap.org](http://www.esswap.org)

*Co-sponsored by EUFEPS*

**8th Training Course on High-Throughput (HT) Drug Metabolism/Disposition (DM/D)**

May 25-29, 2009, Amsterdam, The Netherlands  
**Contact:** EUFEPS Secretariat, PO Box 1136  
 SE-111 81 Stockholm, Sweden  
 Email conferences@eufeps.org www.eufeps.org

**Efficient Quality Assurance in Pharma**

May 26, 2009, Stockholm, Sweden  
**Contact:** Lars Nordmark, Box 601  
 251 06 Helsingborg. Tel +46(0)42 4901917  
 Email lars.n@mentoronline.se  
 http://events.chemicalnet.se/09\_qa/

**APIB-2009: Active Pharmaceutical Ingredients from Bioprocesses, from research to industrial and regulatory issues**

June 3-6 2009, Pavia, Italy  
**Contact:** Email francine.baumgarthen@edqm.eu  
 http://www.edqm.eu/site/API-from-Bioprocess-Pavia-Italy-1359.html

**PharmSciFair**

June 8-12, 2009, Nice, France  
**Contact:** EUFEPS Secretariat, PO Box 1136  
 SE-111 81 Stockholm, Sweden  
 Email conferences@eufeps.org www.eufeps.org

**Food and Function 2009 – Role of Fermented Food in the Maintenance of Health**

June 8, 2009, Zilina, Slovakia  
**Contact:** Maria Kasmanova,  
 D. Polskeho 604/5 024 01 Kysucke Nove Mesto  
 Slovakia  
 Tel +421 918 707371, Fax + 421 41 4000123 Email  
 info@foodandfunction.com  
 www.foodandfunction.com

**5th Kuopio Alzheimer Symposium**

June 11-13, 2009, Kuopio, Finland  
**Contact:** Organizing Committee  
 www.uku.fi/alz2009

**Biosimilars and analytical challenges**

June 11, 2009, London, England  
**Contact:** Gabriella Highfield, Royal  
 Pharmaceutical Society of Great Britain  
 Tel +44 207 572 2640 Email events@rpsgb.org  
 http://www.rpsgb.org/pdfs/sciconf090611.pdf

**ESSWAP Whole Animal Pharmacology Summer School – Behavioural Pharmacology Course**

June 14-19, 2009, Oss, The Netherlands  
**Contact:** EUFEPS Secretariat, PO Box 1136  
 SE-111 81 Stockholm, Sweden  
 Email conferences@eufeps.org www.eufeps.org

**European Association of Faculties of Pharmacy 2009 Annual Conference**

June 18-20, 2009, Oslo, Norway  
**Contact:** Karen Marie Ulshagen, Postboks 1068  
 Blindern, N-0316 Oslo, Norway  
 Tel +47 22856585 www.farmasi.uio.no

**EDQM Training Course - The European Pharmacopoeia 6<sup>th</sup> edition**

July 6-7, 2009, Strasbourg, France  
**Contact:** EDQM Premises, 7 allée Kastner 67081  
 Strasbourg, France  
 www.edqm.eu/en/PhEur-Training-Session-Strasbourg-France-256.html

**Biomedical Transporters 2009 Conference - Membrane transporters and their impact on drug discovery**

August 9-13, 2009, Thun, Switzerland  
**Contact:** Tina Rothenbühler, University of Bern,  
 Switzerland  
 www.bioparadigms.org/biomedical09/09.htm

**British Pharmaceutical Conference 2009**

September 6-9, 2009, Manchester, UK  
**Contact:** Health Links, 3rd Floor, Windsor  
 House, 11A High Street, Kings Heath  
 Birmingham B14 7BB, UK  
 Tel +44 121 248 3399, Fax +44121 248 3390  
 Email alyons@health-links.co.uk  
 www.bpc2009.org

**EUROTOX 2009 - 46<sup>th</sup> Congress of the European Societies of Toxicology**

September 13-16, 2009, Dresden, Germany  
**Contact:** K.I.T. Congress Incentives GmbH  
 Dresden, Münzgasse 2, 01067 Dresden  
 Germany. Tel +49 351 496 75 40  
 Fax +49 351 495 61 16 Email info@kitdresden.de  
 www.eurotox2009.org

**Neonatal Intensive Care Course**

September 14-18, 2009, Genoa, Italy  
**Contact:** Organizing Secretariat, Claudia Olcese  
 Scuola Internazionale di Scienze Pediatriche  
 (S.I.S.P.)  
 Email claudiaolcese@ospedale-gaslini.ge.it  
 www.nic.sispgce.com

**Hands-on Workshops on Concepts & Applications of Population-based In Vitro-In Vivo Extrapolation of ADME Properties**

September 21-25, 2009, Sheffield, UK  
 November 2-6, 2009, La Jolla, USA  
**Contact:** Simcyp Ltd, Att. Kelly Jinkinson  
 Blades Enterprise Center, John Street, Sheffield  
 S2 4SU, UK, Fax +44 114 2922333  
 Email workshops@simcyp.com  
 www.simcyp.com

**International Conference on Pharmacokinetics: Spearheading Advances and Delivering the Science - On the Occasion of Professor Malcolm Rowland's 70th Birthday**

October 5, 2009, London, United Kingdom  
**Contact:** APS, 840 Melton Road, Thurmaston  
 Leicester LE4 8BN, United Kingdom  
 Fax +44 116 2640141. Email info@apsgb.org  
 www.apsgb.co.uk  
 EUFEPS, PO Box 1136, SE-111 81 Stockholm  
 Sweden. Fax +46 8 4113217  
 Email conferences@eufeps.org www.eufeps.org

**International Conference on Pharmacokinetics: Spearheading Advances and Delivering the Science**

October 5 • 2009 • Royal Pharmaceutical Society • London • United Kingdom  
**On the Occasion of Professor Malcolm Rowland's 70th Birthday**

*This Conference is Organised by the Academy of Pharmaceutical Sciences of Great Britain (APSGB) and the European Federation for Pharmaceutical Sciences (EUFEPS) Co-sponsored by the Royal Pharmaceutical Society of Great Britain (RPSGB) and the International Pharmaceutical Federation (FIP)*

**Aim**

This one-day conference will highlight and review recent advances in the field of pharmacokinetics. Professor Malcolm Rowland has been contributing to the field of pharmacokinetics in a most scholarly and

inspiring manner for more than 40 years. This conference should be attended by anyone interested in the most recent advances in the field of pharmacokinetics, working in academia or the pharmaceutical industry or drug regulation.

**Sessions**

Kinetics of drug transport, Kinetics of Drug Metabolism, Drug regulation and the pharmaceutical industry, Education

**Socials**

Reception (for all)  
 Dinner (optional, including for dinner only)

**Venue**

Royal Pharmaceutical Society of Great Britain, 1 Lambeth High Street, SE1 7JN London, United Kingdom

**Additional Information & Registration & Accommodation**

For information on the programme, as well as on registration and accommodation options, consult the Conference Website on the EUFEPS or APS website (see below) and/or forthcoming pdf of the complete "Second Announcement". Alternatively, contact: APS, 840 Melton Road, Thurmaston, Leicester LE4 8BN, United Kingdom Tel +44 116 2692299, Fax +44 116 2640141 info@apsgb.org www.apsgb.co.uk EUFEPS, PO Box 1136, SE-111 81 Stockholm, Sweden Tel +46 8 7601050, Fax +46 8 4113217 conferences@eufeps.org www.eufeps.org