

# Pharmacology International

No. 74 June 2010 The semi-annual newsletter from the International Union of Basic and Clinical Pharmacology

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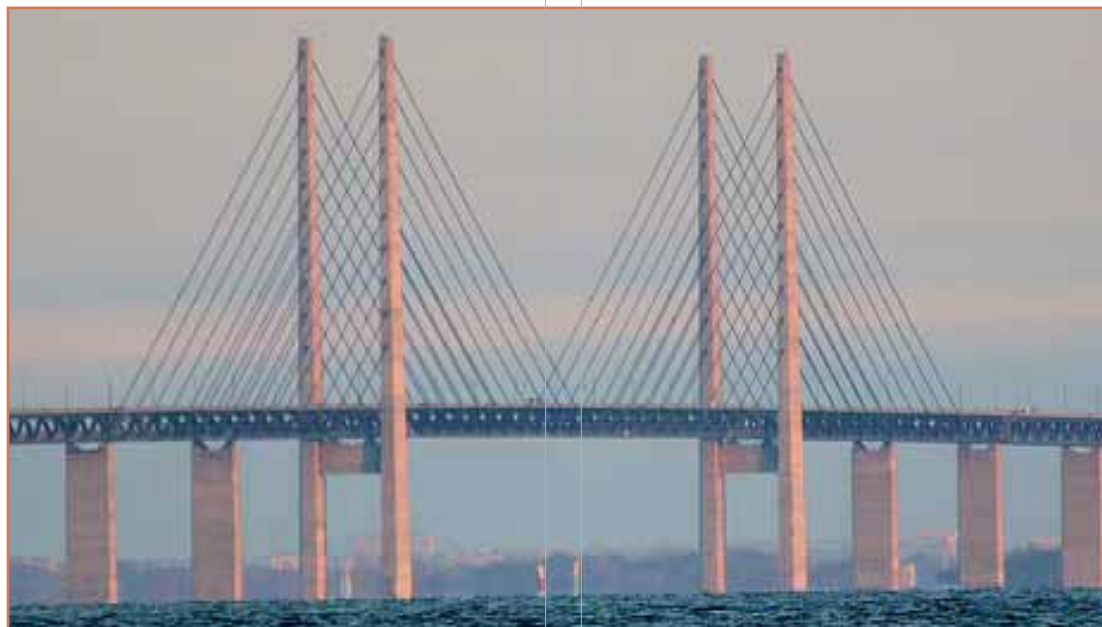


## WELCOME TO COPENHAGEN!



On behalf of the Danish Pharmacological Society and the British Pharmacological Society, it is our great pleasure to welcome you to Copenhagen and **WorldPharma2010**, the 16th World Congress organized under the auspices of the International Union of Basic and Clinical Pharmacology (IUPHAR). The mission of WorldPharma2010 is to consider how pharmacologists can collaborate in meeting the need for affordable, safe and effective medications and to determine how best to define the rational use of drugs.

As WorldPharma2010 is the first joint World Congress for basic and clinical pharmacology, our slogan is "*WorldPharma2010 - Bridging Basic and Clinical Pharmacology*". Given this theme, the high level bridge across the Øresund joining Denmark and Sweden was a natural choice as the logo.



Opened on July 1, 2000, the Øresund Link is the longest bridge/tunnel in Europe.  
Photograph by Niels M. Knudsen ([www.nmknudsen.dk](http://www.nmknudsen.dk))

With approximately 3,000 registrants, and an outstanding scientific program, it is anticipated that WorldPharma2010 will be one of the most spectacular events in the 50-year history

*Continued on page 2...*

## WELCOME TO COPENHAGEN! (CONTINUED)

of IUPHAR World Congresses. As detailed in the congress website ([www.WorldPharma2010.org](http://www.WorldPharma2010.org)), the program consists of some 700 oral, and nearly 2000 poster presentations. Included among the oral presentations are the opening lecture, the IUPHAR 50th anniversary lecture, 24 plenary lectures, 18 focused conferences, 36 workshops, and one sponsored symposium.

Apart from the science and the pleasure of meeting with old friends and establishing new collaborations, the city of Copenhagen is a destination unto itself. Indeed, it ranks number five on *The New York Times* list of places to visit in 2010. According to the *Times*, the Danish capital is one of the greenest and most stylish cities in the world. The Copenhagen Metro was recently named the best subway system, and Noma the best restaurant in the world. Thus, there is plenty to see and do in Copenhagen for accompanying guests and for Congress participants before, after, or in between scientific sessions. See page 25 for more information. We urge all interested parties to register for WorldPharma2010 as soon as possible to ensure a good selection of accommodations and to allow ample opportunity for planning.

Once again: *Welcome to Copenhagen!* ●

Kim Brøsen  
President



Michael J. Mulvany  
Secretary General



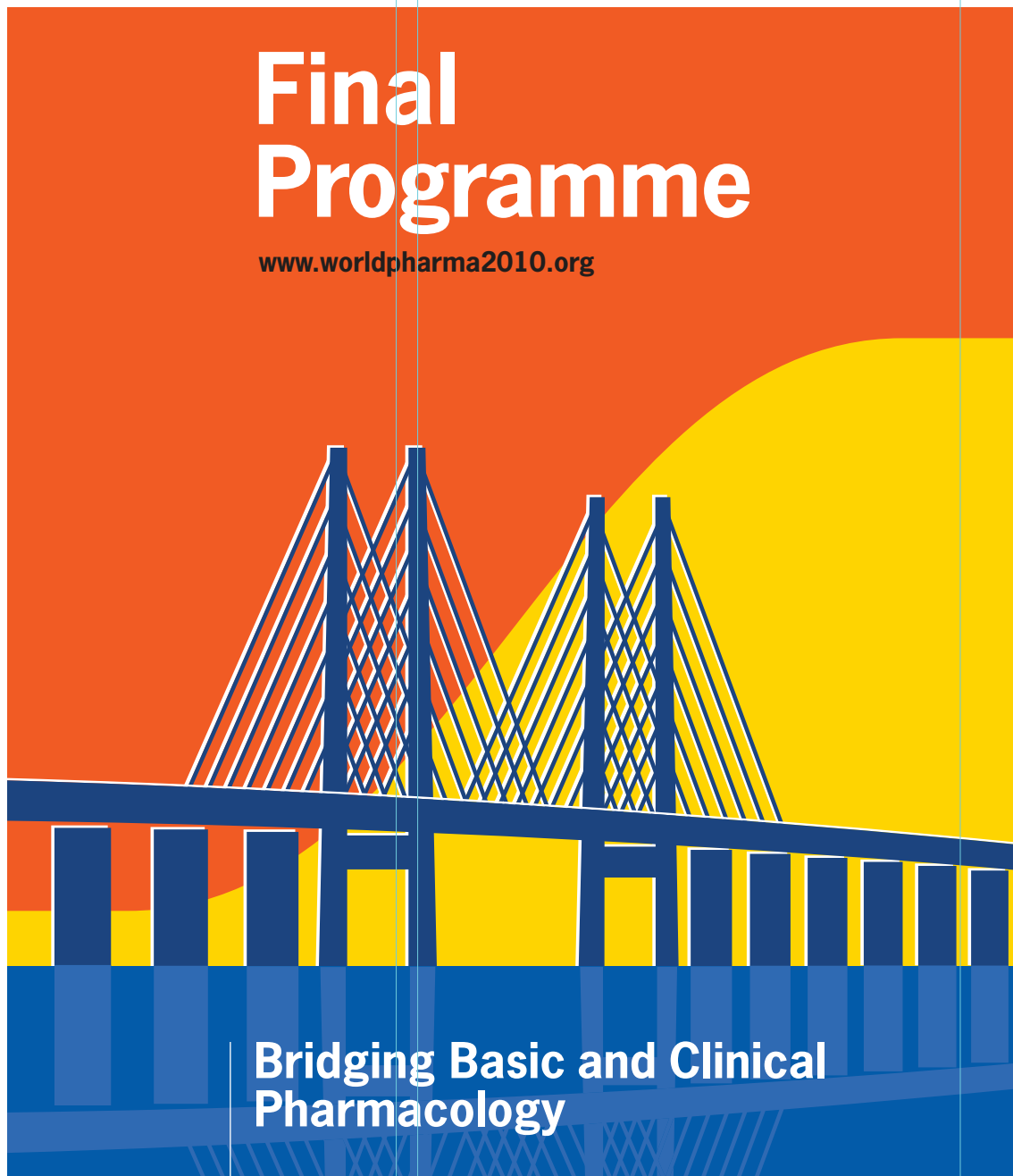


# WorldPharma2010

16th World Congress on Basic and Clinical Pharmacology  
17-23 July, 2010, Copenhagen, Denmark

## Final Programme

[www.worldpharma2010.org](http://www.worldpharma2010.org)



Bridging Basic and Clinical  
Pharmacology



*The A. P. Møller and Chastine Mc-Kinney Møller Foundation*  
*A. P. Møller og Hustru*  
*Chastine Mc-Kinney Møllers Fond til almene Formaal*



NOW AVAILABLE AT [www.WorldPharma2010.org](http://www.WorldPharma2010.org)

# General information

## Registration & information desk

### Opening hours:

Sunday 18 July:	09:00 - 18:30
Monday 19 July:	07:30 - 18:30
Tuesday 20 July:	08:00 - 18:30
Wednesday 21 July:	08:00 - 18:30
Thursday 22 July:	08:00 - 18:30
Friday 23 July:	08:00 - 13:00

### Registration fees on-site:

Regular participants:	€ 800
PhD and research students:	€ 400
Accompanying persons:	€ 150

### Hotel accommodation

The Registration desk will handle all enquiries related to hotel accommodation.

### Entitlements participants

#### Delegates' registration includes:

- Participation in the scientific programme
- One copy of final programme
- One copy of abstracts (on USB-stick)
- Refreshment breaks according to the programme
- Opening reception at the congress venue
- Reception at City Hall – on availability basis

### Entitlements accompanying persons

#### Accompanying persons' registration includes:

- Opening reception at the congress venue
- Reception at City Hall – on availability basis
- Sightseeing tour of Copenhagen

### Registration cancellation & refund policy

Credit cannot be given for unattended events, late arrivals or early departure. All reimbursements will only be processed after the congress.

### Social programme

#### Sunday 18 July 17:30 - 20:00 Opening ceremony, lecture and reception at the congress venue

Attendance is free of charge, but enrolment is required, which you can do when you register.

#### Monday 19 July 19:30 - 21:00 Reception at Copenhagen City Hall

The Municipality of the City of Copenhagen has invited the congress participants and their accompanying persons to a reception at the City Hall. The guests will be welcomed by one of the mayors of Copenhagen and a buffet will be served.



Fully booked – but returned invitations may be available at the registration desk.

### **Wednesday 21 July 19:00 - 23:30 Congress Dinner at the Tivoli Gardens**

Choose between a casual dinner or a gourmet dinner.

A memorable highlight of the congress will be the congress dinner that provides an ideal opportunity to mingle and meet other colleagues at restaurants in the Tivoli Gardens. There will be two choices of menus at restaurants next to each other: Casual or gourmet.

Tickets must be purchased at the registration desk in advance.

*Price:* Casual dinner: € 60 includes a welcome drink, three-course dinner and 2 glasses of wine.

*Gourmet dinner:* € 90 includes a glass of Cremen, a three-course dinner and wine ad libitum, coffee and avec.

### **Excursions**

Tickets for tourist excursions will be sold from the Registration & information desk.

### **Congress language**

The official language of the congress is English. No translation services will be provided.

### **Name badges**

Entrance to the congress area and to the various social events will be limited to badge holders only. If the badge is lost, please contact the registration desk. A fee of DKK 50 (€ 7) will be charged for each new badge.

### **Voltage and plugs**

Electricity in Denmark is 220-volt current. Plugs are European standard with two round pins.

### **Insurance**

You are requested to arrange your own health and travel insurance. Neither the congress nor the congress organizers are able to take responsibility for any injuries or damages that may occur during the congress.





### Information to presenters

- The auditoria will be equipped with PCs with Windows 7 and PowerPoint 2010 software and data projectors. If your presentation is in another format (e.g. Mac) we cannot ensure compatibility
- Please bring your slides in PowerPoint format on a USB-stick, and deliver it to the Speakers Preview Room (Room 16) at the congress at least 3 hours prior to the session start. For morning sessions leave them the day before, please
- Prepare your oral presentation so you have 5 minutes for discussion
- If your presentation includes video clips, remember to load them separately onto your USB-stick, please
- Speakers are requested to present themselves to the chair in the lecture room 15 minutes before session start

### Guidelines for posters

- The size at your disposal on the poster board is: 90 cm width x 120 cm height. Only pins can be used to mount your poster. Pins will be supplied at the poster exhibition area
- The poster exhibition will take place in the Poster Area

- Posters should be mounted before 10:00 on the day of your presentation and taken down by 18:00 hours the same day. You have been assigned a poster board number and date and you are expected to be at your assigned space 13:00 - 14:00 on the day of your presentation.

### Information on the internet

#### About the congress:

[www.worldpharma2010.org](http://www.worldpharma2010.org)

#### What to see and do in Copenhagen:

[www.aok.dk](http://www.aok.dk)

#### Copenhagen Airport:

[www.cph.dk](http://www.cph.dk)

#### The weather in Denmark:

[www.dmi.dk](http://www.dmi.dk)

#### The metro:

[www.m.dk](http://www.m.dk)

#### Information about buses, harbour buses and trains:

[www.movia.dk](http://www.movia.dk)

[www.dsb.dk/s-tog](http://www.dsb.dk/s-tog)

#### To find the easiest way to get around:

[www.rejseplanen.dk](http://www.rejseplanen.dk) ●

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### General information

Some of you may wonder why there is no CPT Congress but WorldPharma instead...?

Not all of you may have noticed the change. IUPHAR now means *International Union of Basic and Clinical Pharmacology.*

Besides being a challenge, the members of the two organizations agree that this merger is in the best interest of the discipline overall. The combined Congress also symbolizes the ongoing convergence of experimental and clinical pharmacology. It is thus highly important for those of us in the Clinical Pharmacology Division to represent the interests and needs of clinical pharmacologists throughout the world.

Please share your ideas with us by attending the

## **IUPHAR Clinical Pharmacology Division General Assembly**

**12:45-14:00 on Wednesday, July 21<sup>st</sup>, 2010**  
Room BV5 of Bella Conference Center.

### **Clinical Pharmacology Division Meeting Agenda**

- Reports of the Division and its Subcommittees
- Future Congresses of Basic and Clinical Pharmacology
- WHO Booklet on Clinical Pharmacology
- New Issues and Subcommittees
- General Discussion



We look forward to seeing you in Copenhagen.

Petra A. Thürmann  
Secretary  
Clinical Pharmacology Division  
IUPHAR •

# Highlights from the WorldPharma2010 Program



Pharmacology  
International

June 2010



## Speakers

*e-learning and e-assessment in pharmacology*  
Paul White (Australia) and David Dewhurst (UK)

*Teaching pharmacology in a global arena*  
Christiaan B. Brink (South Africa)

*Active teachers / engaged students: A status report*  
Patangi K. Rangachari (Canada)

*Pharmacology education for clinical students*  
Simon Maxwell (UK)

Chaired by Joan M. Lakoski (USA) •



# Highlights from the WorldPharma2010 Program

## *Advances in Gastrointestinal Pharmacology*

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### *Part 1: Gastrointestinal Nutrient Chemosensing and the Gut-Brain Axis*

Sunday, July 18 from 12:45 to 16:15 (Part I)  
Meeting Room 20, Bella Conference Center, Copenhagen

The emphasis of this workshop will be on chemosensing in the gastrointestinal tract and its relevance to the pharmacology of this system.

For additional information, please contact:

C.H. Cho ([chcho@cuhk.edu.hk](mailto:chcho@cuhk.edu.hk))

or

K. Torii ([kunio\\_torii@ajinomoto.com](mailto:kunio_torii@ajinomoto.com))

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### *Parts 2 & 3: From Functional to Structural Disease Targets*

Monday, July 19 from 09:30 to 12:15 (Part II) and 12:45 to 14:15 (Part III)  
Meeting Room BV 1/2/3, Bella Conference Center, Copenhagen

This workshop focuses on identification of novel targets for the treatment of gastrointestinal disorders.

For additional information, please contact:

Sandor Szabo ([sandor.szabo@va.gov](mailto:sandor.szabo@va.gov))

or

Koji Takeuchi ([takeuchi@mb.kyoto-phu.ac.jp](mailto:takeuchi@mb.kyoto-phu.ac.jp)) •

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## **Gastrointestinal Pharmacology Section**

**President**

C.H. Cho,  
Ph.D.

**Vice-President**

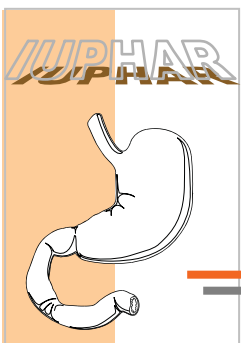
K. Takeuchi,  
Ph.D.

**Secretary**

D. Chen, M.D.,  
Ph.D.

**Treasurer**

J.A. Rudd, Ph.D.  
China



# Highlights from the WorldPharma2010 Program



A workshop by the IUPHAR Section on  
**Pharmacogenetics  
and  
Pharmacogenomics**

## ***Implementation and Obstacles of Pharmacogenetics in Clinical Practice***

Tuesday, July 20 from 12:45 to 14:15

Auditorium 11, Bella Conference Center, Copenhagen

This workshop addresses views and experiences from different nations and continents (North- and South-America, Europe and Australia) on challenges associated with incorporating pharmacogenetics into medical practice. A novel vision is the implementation of pharmacogenetics into up-to-date imaging technologies, such as functional MRI. The workshop includes a discussion on empiricism and ethics in pharmacogenetic studies and the use of this information in clinical practice.

Deanna Kroetz (San Francisco, CA, USA)

*Challenges in bringing pharmacogenetics into practice: the US perspective*

Guilherme Suarez-Kurtz (Sao Paulo, Brazil)

*Challenges of global implementation of pharmacogenetics into clinical practice*

Adrián Llerena (Badajoz, Spain)

*Present use and limitations of pharmacogenetics in clinical psychiatry*

Andrew Somogyi (Adelaide, Australia)

*Obstacles to the implementation of pharmacogenetic testing in Australia*

Angela Seeringer (Ulm, Germany)

*Imaging Pharmacogenetics: Brain fMRI for visualizing intermediate phenotypes of drug response*

Vural Özdemir (Montreal, Canada)

*Postgenomics medicine, empiricism and ethics of bioethics preventing “ethical inflation” in implementation of pharmacogenetics*

Chairpersons:

Magnus Ingelman-Sundberg (Stockholm, Sweden)

Ingolf Cascorbi (Kiel, Germany) ●

# Highlights from the WorldPharma2010 Program

## *Translating the human genome:*

### *From orphan G-protein coupled receptors to novel therapeutic targets*

Tuesday, July 20 from 12:45 to 14:15

Auditorium 15, Bella Conference Center, Copenhagen

#### **A workshop by the IUPHAR Committee on Receptor Nomenclature and Drug Classification**

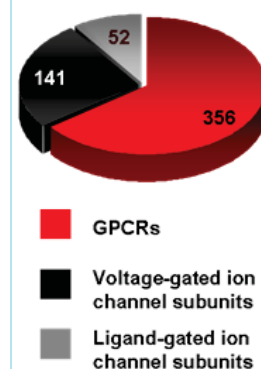
G-protein coupled receptors (GPCRs) in Family A are the targets of nearly half of all current medications and represent a significant proportion of the 'druggable genome'. The International Union of Basic and Clinical Pharmacology Committee on Receptor Nomenclature and Drug Classification (NC-IUPHAR) has a major interest in the 'orphan' GPCRs recently paired with their cognate ligands, as well as in considering the progress in 'de-orphanising' the remaining 93 Family A GPCRs that are thought to be present in the human genome but for which an endogenous ligand has yet to be found. The Committee meets every six months to review the latest work on these topics. The results of these discussions can be found on the NC-IUPHAR-DB website ([www.iuphar-db.org](http://www.iuphar-db.org)) under 'Latest Pairings' ([www.iuphar-db.org/latestPairings.jsp](http://www.iuphar-db.org/latestPairings.jsp)).

This website provides a record of pairings supported by a single publication and statements from relevant NC-IUPHAR expert subcommittees summarising arguments for and against such proposed pairings. Importantly, the site also lists retractions, where initial pairings between ligands and orphan receptor cannot be reproduced.

During the last decade rapid progress has been made on the characterization of new pharmacological tools for studying receptors, such as radiolabelled ligands, functional assays and selective agonists and antagonists. The NC-IUPHAR subcommittees prepare individual templates for the database and publish recommendations for nomenclature and receptor classification. These are made freely available by publication in *Pharmacological Reviews*. A list of the most recent reviews can be found under 'Hot Topics' ([www.iuphar-db.org/HotTopics.jsp](http://www.iuphar-db.org/HotTopics.jsp)).

This workshop reflects the progress made in characterizing three GPCR families previously designated as 'orphan' receptors but that now appear to be new therapeutic targets. All have been the subjects of recent issues of *Pharmacological Reviews*. Although the pregnancy hormone Relaxin was first characterized in 1926, its receptors were not identified until 2002. The information accumulated on Relaxin is now being applied in clinical trials. The 'cheese and chocolate' hypertensive crisis was for many years thought to be due to the indirect actions of certain trace amines on neurotransmitter release. However, in recent years specific receptors

Number of human genes



## *Translating the human genome: From orphan G-protein coupled receptors to novel therapeutic targets* (continued)

for these substances have been identified using the technique of 'reverse pharmacology'. Orphan receptors are used to screen tissue extracts to search for their endogenous ligands. The success of this approach is illustrated by a new family of chemical messengers, the apelin peptides. Finally, GPR3 is an 'orphan' receptor for which the endogenous ligand remains unknown. Interestingly, however, it was recently found that overexpression of GPR3 stimulates amyloid-beta production, the hallmark of Alzheimer's disease. This discovery has catalysed the search for surrogate GPR3 ligands. The NC-IUPHAR database has a list of the remaining 93 orphan GPCRs in Family A. For GPR3 see the website at [www.iuphar-db.org/DATABASE/ObjectDisplayForward?familyId=16&objectId=83](http://www.iuphar-db.org/DATABASE/ObjectDisplayForward?familyId=16&objectId=83).

### **Apelins and the APJ receptor**

*Dr. Anthony P. Davenport  
Clinical Pharmacology Unit  
University of Cambridge, UK*



The actions of the recently discovered apelin family of peptides are mediated by a single GPCR, APJ. The apelins appear to be important factors in regulating the human cardiovascular system. In blood vessels, apelins mediate endothelium-dependent vasodilatation as well as direct vasoconstriction by interacting with smooth muscle APJ receptors. In the heart, apelins increase cardiac contractility by acting on cardiac myocytes. Indeed, they are the most potent inotropic agents yet identified. While [Pyr1]apelin-13 is the major isoform, shorter sequences retaining agonist activity have been identified. A computational ligand-based strategy has been employed to design cyclic peptide agonists and antagonists.

Maguire JJ, *et al.*, (2009) [Pyr1]apelin-13 identified as the predominant apelin isoform in human heart: vasoactive mechanisms and inotropic action in disease. *Hypertension*, 4,598-604.

Pitkin SL *et al.*, (2010) Modulation of the apelin/APJ system in heart failure and atherosclerosis in man. *Brit J Pharmacol* (In Press)

Pitkin SL, *et al.*, (2010). International Union of Basic and Clinical Pharmacology. Apelin Receptor Nomenclature, Distribution, Pharmacology and Function. *Pharmacol Rev* (In Press).

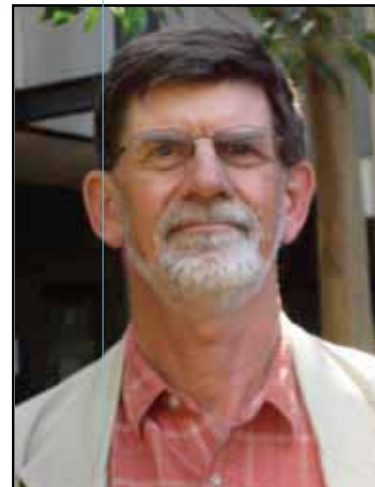
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***Translating the human genome:  
From orphan G-protein coupled receptors  
to novel therapeutic targets (continued)***

**Relaxin family peptides and their receptors: Realising the therapeutic potential**

*Pr. Roger J. Summers*

*Monash Institute of Pharmaceutical Sciences and  
Department of Pharmacology  
Monash University, Australia*



Relaxin family peptides are hormones of the insulin superfamily. Relaxin, Insulin-Like Peptide 3 (INSL3), relaxin 3 and INSL5 are the cognate ligands for the Relaxin-Family Peptide (RXFP) Receptors 1-4, respectively. All 4 RXFP receptors are recently de-orphanised GPCRs and are strikingly different from the tyrosine kinase receptors for insulin and insulin growth factors. RXFP1 and 2 are leucine-rich repeat containing GPCRs, whereas RXFP3 and 4 are small peptide receptor-like GPCRs. RXFP1 and 2 increase cAMP production by binding to one or more of several G-proteins including G<sub>s</sub>, G<sub>oB</sub> and G<sub>13</sub>. Its signalling may also involve Erk1/2, tyrosine phosphorylation and nitric oxide. In contrast, RXFP3 and 4 inhibit cAMP synthesis and, in addition, RXFP3 activates Erk1/2. Relaxin has shown great potential as a new therapy for congestive heart failure. It is currently undergoing Phase III clinical trials for this indication.

Du XJ, *et al.*, (2010) Cardiovascular effects of relaxin: from basic science to clinical therapy. *Nat Rev Cardiol* 7, 48-58.

Van der Westhuizen ET, *et al.*, (2010) H2 Relaxin Is a Biased Ligand Relative to H3 Relaxin at the Relaxin Family Peptide Receptor 3 (RXFP3). *Mol Pharmacol*, 77, 759-77

Bathgate RA *et al.*, (2006) International Union of Pharmacology LVII: recommendations for the nomenclature of receptors for relaxin family peptides. *Pharmacol Rev*; 58, 7-31.

**Trace amines and TA<sub>1</sub> receptors**

*Dr. Janet J. Maguire*

*Clinical Pharmacology Unit  
University of Cambridge, UK*



Trace amines, such as *p*-tyramine and  $\beta$ -phenylethylamine, are synthesised endogenously and ingested in the diet. In patients taking monoamine oxidase inhibitors, hypertensive crisis may be precipitated by consumption of foods rich in trace amines. This has been thought to be due to the sympathomimetic actions of the trace amines. In 2001 a novel group of mammalian G protein-coupled receptors (GPCRs) belonging to the rhodopsin super-family were cloned. One of these receptors, TA<sub>1</sub>, is encoded by the human *TAAR1* gene and is present in rat and mouse genomes. It is activated by endogenous ligands, including the trace amines *p*-tyramine and  $\beta$ -phenylethylamine and thyronamine, and its iodinated forms. A number of drugs, most notably amphetamine and its derivatives, are TA<sub>1</sub> agonists. The TA<sub>1</sub> receptor



## *Translating the human genome: From orphan G-protein coupled receptors to novel therapeutic targets (continued)*

has not yet been directly linked with any pathophysiological process, although trace amines are associated with hypertensive crisis and may be responsible for some headache and psychiatric disorders. We have recently demonstrated that TA<sub>1</sub> receptors are expressed in the human cardiovascular system, including vascular smooth muscle cells, and that trace amines and related compounds constrict human isolated blood vessels independently of classical amine receptor activation. Interactions of TA<sub>1</sub> and components of the dopamine system in the brain have also been reported, suggesting that TA<sub>1</sub> may be a regulator of dopamine neurotransmission. Therefore, the TA<sub>1</sub> receptor may represent a novel therapeutic target for the treatment of a variety of conditions.

Maguire JJ *et al*, (2009) International Union of Pharmacology. LXXII. Recommendations for trace amine receptor nomenclature. *Pharmacol Rev*, 61,1-8.

### **Discovery of GPCR Ligands for GPR3, a GPCR Modulating Amyloid Secretion in Alzheimer's Disease**

*Dr. David Fischer*

*BioFocus, Leiden, The Netherlands*

Deposition of the amyloid-beta peptide is a pathological hallmark of Alzheimer's disease. GPR3 was identified as a novel Alzheimer's drug target in human cells using Galapagos' target discovery platform. Overexpression of GPR3 stimulates amyloid-beta production, whereas genetic ablation of GPR3 prevents accumulation of the amyloid-beta peptide *in vitro* and in an Alzheimer's disease mouse model GPR3 expression increases formation and cell-surface localization of the mature gamma-secretase complex in the absence of an effect on Notch processing. Strategies are being developed to identify small molecule inhibitors of GPR3 activity on gamma-secretase.



Arts GJ, *et al* (2003). Adenoviral vectors expressing siRNAs for discovery and validation of gene function. *Genome Res*. 13:2325-32.

Michiels FH, *et al* (2002). Arrayed adenoviral expression libraries for functional screening. *Nat Biotechnol*,20,1154-7.

Thathiah AK, *et al* (2009). The orphan G protein-coupled receptor 3 modulates amyloid-beta peptide generation in neurons. *Science*, 323,946-51. ●

# Highlights from the WorldPharma2010 Program

## The IUPHAR Initiative in *Integrative and Organ Systems Pharmacology*

Tuesday, July 20 from 12:45 to 14:15

Auditorium 10, Bella Conference Center, Copenhagen

Largely as a result of the shift in focus of biological research to a more reductionist approach, there has been a decreased emphasis on pharmacological training essential for the translation of basic research findings into useful therapies. It has become apparent in the past few years that more emphasis must be placed on translational research to ensure continued improvements in medical therapies. However, not only are graduate and medical students not being adequately trained in the principles and techniques of integrative and organ systems pharmacology (IOSP), the number of senior scientists able to provide training in this area is diminishing. To address this important issue, the International Union of Basic and Clinical Pharmacology (IUPHAR) is pursuing a vigorous international initiative to promote training in these principles and techniques.

Speakers:

**Integrative and Organ Systems  
Pharmacology**

David B. Bylund, Omaha, USA

**Integrative and Organ Systems  
Pharmacology in Europe**

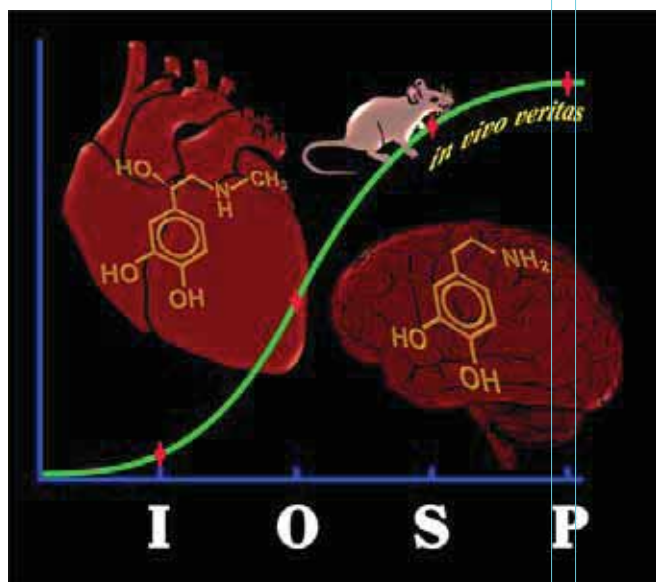
Michael Collis, London, UK

**Integrative and Organ Systems  
Pharmacology in Africa**

Christiaan Brink, Potchefstroom, South Africa

**Open Discussion**

Session Chair: S.J. Enna, Kansas City, USA  
IUPHAR Secretary-General •



# Highlights from the WorldPharma2010 Program

## *Approaches to medicinal plant research in Africa: Strategy towards 2014 and beyond*

A workshop by the

### **Pharmacology for Africa (PharfA) Initiative**

Wednesday, July 21 from 12:45 to 14:15

Meeting Room 20, Bella Conference Center, Copenhagen

Purified plant extracts as lead compounds in pharmacology research by Anis Klouz (Tunisia)

The utilization of crude plant extracts to investigate pharmacological effects: Potential and pitfalls by Badiia Lyoussi (Morocco)

The utilization of crude plant extracts to investigate toxicity: Potential and pitfalls by Anastasia Guantai (Kenya)

Clinical testing and pharmacovigilance data for scientific evaluation of medicinal plants used in traditional medicine by Alexander Dodoo (Ghana)

Cultural-ethical dilemmas in medicinal plant research by Guata Yoro Sy (Senegal)

Approaches to medicinal plant research: What works best in Africa? Opportunities in Africa, pitfalls, capacity building strategies, way forward towards 2014 and beyond - A panel discussion led by Douglas W. Oliver (South Africa) •



**Highlights from the  
WorldPharma2010 Program**

**The IUPHAR 50th Anniversary Lecture**

**Dr. Paul M. Vanhoutte**  
**University of Hong Kong**



***Regenerate to Be Old***

**Tuesday, July 20  
17:30 - 18:15**

**Hall A2, Bella Conference Center, Copenhagen**



# Satellites to WorldPharma2010



**Yossef Tam, D.M.D., Ph.D.**  
National Institute on Alcohol  
Abuse and Alcoholism/NIH

**Role of CB1 Receptor  
in Regulation of Bone  
Formation**



**Itai Bab, D.M.D.**  
Bone Laboratory  
Hebrew University of  
Jerusalem, Israel

**CB2 Regulation of Bone  
Metabolism in Health and  
Disease**



**Andreas Zimmer, Ph.D.**  
University of Bonn,  
Germany

**Human Cannabinoid  
Receptor Variants in  
Osteoporosis**



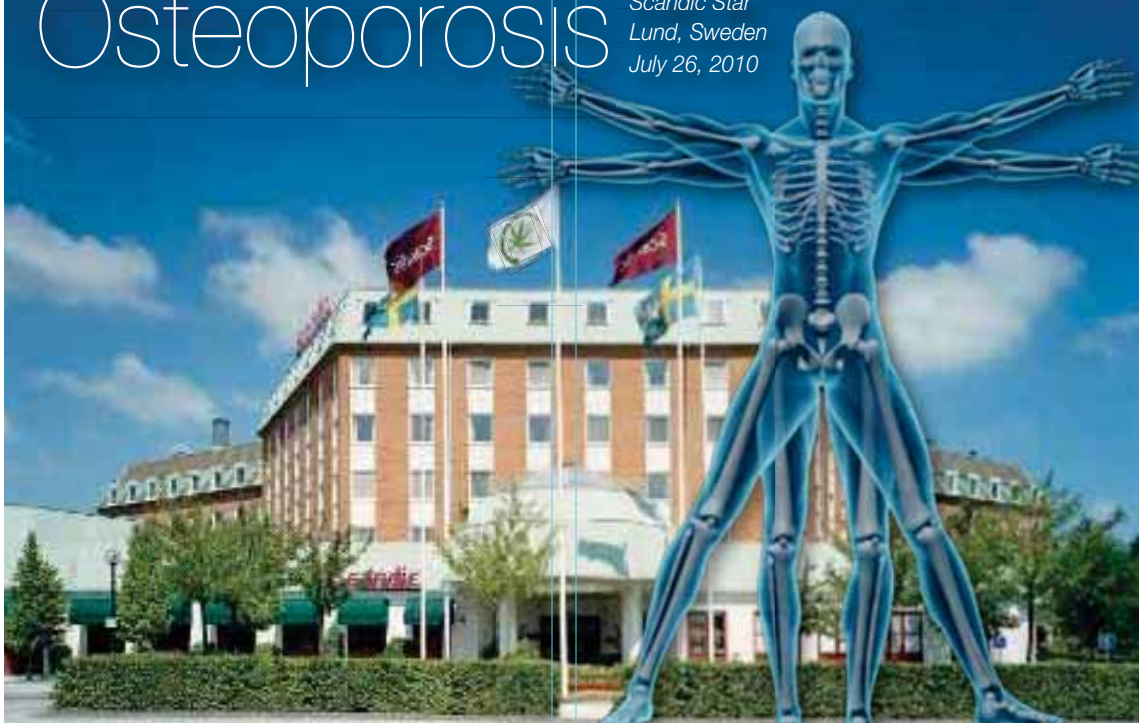
**Ruth A. Ross, Ph.D.**  
University of Aberdeen,  
Scotland, UK

**Cannabinoid Receptor  
GPR55 and Osteoclast  
Function**

Presented at the 2010 ICRS Symposium on the Cannabinoids

## Cannabinoids, Bone Remodeling, and Osteoporosis

*Scandic Star  
Lund, Sweden  
July 26, 2010*



### **Organizers:**

Vishnudutt Purohit, DVM, Ph.D.  
Rao Rapaka, Ph.D., FAAPS  
Division of Basic Neuroscience & Behavioral Research  
National Institute on Drug Abuse (NIDA)  
National Institutes of Health (NIH)

### **Contact:**

6001 Executive Boulevard Rm 4274, MSC 9555  
Bethesda, MD 20892-9555  
Phone: 301-594-5753  
Fax: 301-594-6043  
eMail: vpurohit@nida.nih.gov

Pharmacology  
International

June 2010





[ Special IUPHAR Member packages available - Visit [www.ICRS2010.org](http://www.ICRS2010.org) and click on the IUPHAR logo ]

Cosponsored by the **NC-IUPHAR Subcommittee on Cannabinoid Receptors**  
The 20th Annual Symposium of the International Cannabinoid Research Society

# ICRS2010

Scandic Star  
Lund, Sweden  
July 23 - 27, 2010



**Presidential Plenary Speaker**  
**Kjell Fuxe, M.D.**

Karolinska Institutet  
Dept. of Neuroscience  
Stockholm, Sweden

**Presenting: On the Existence of CB1 Containing Receptor Heteromers in the Brain: Molecular integration via Allosteric Mechanisms**

**Contact Us:**

[ICRS@cannabinoidsociety.org](mailto:ICRS@cannabinoidsociety.org)  
<http://www.ICRS2010.org>

**2010 Organizers:**

Allyn C. Howlett, Ph.D.  
President, ICRS  
Co-chair, IUPHAR Cannabinoid Receptor nomenclature committee

Roger G. Pertwee, Ph.D.  
International Secretary, ICRS  
Co-chair, IUPHAR Cannabinoid Receptor nomenclature committee

Harald S. Hansen, Ph.D., D.Sci.  
University of Copenhagen / Member, ICRS

Thomas Lundqvist, Ph.D.  
Universitetsjukhuset i Lund / Member, ICRS

## IUPHAR Cannabinoid Receptor Special Session: Potential Candidates for Cannabinoid Receptors



**Mary Abood, Ph.D.**  
Temple University, USA

**GPR55: Pharmacology and Signal Transduction**



**Steve Alexander, Ph.D.**  
University of Nottingham, UK

**Endocannabinoid Interactions with PPARs**



**Vincenzo Di Marzo, Ph.D.**  
Institute of Biomolecular Chemistry, Italy

**Cannabinoid Interactions with TRP Channels**



**Maurice Elphick, Ph.D.**  
Queen Mary University of London, UK

**Phylogenetic Relationships of Cannabinoid Receptors and Receptors for Other Lipid Mediators**



**Peter Greasley, Ph.D.**  
AstraZeneca, Sweden

**Discovery of Cannabinoid Agonists for GPR55: Therapeutic Implications**



**Harald Hansen, Ph.D.**  
University of Copenhagen, Denmark

**N-acylethanolamines and Deorphanized GPCRs**

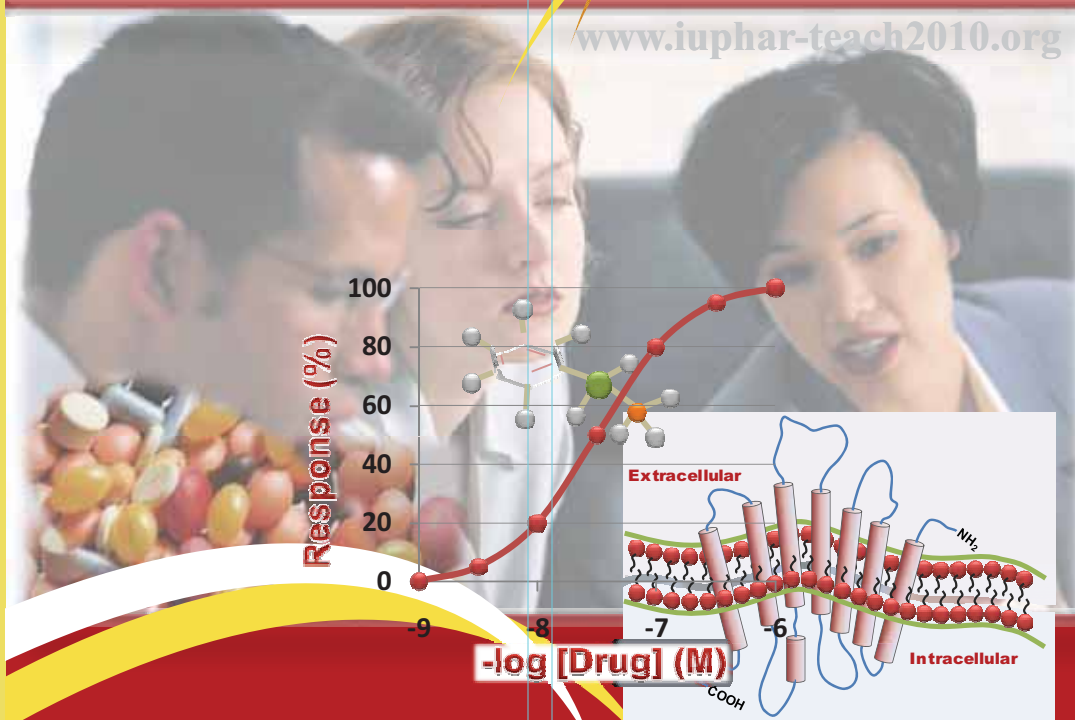
# Satellites to WorldPharma2010

## Empowering Effective Teaching in Pharmacology for a safer Tomorrow

[www.iuphar-teach2010.org](http://www.iuphar-teach2010.org)

Pharmacology  
International

June 2010



IUPHAR Teaching Section

Pre-Conference Satellite Meeting to WorldPharma2010  
held at the Faculty of Pharmaceutical Sciences  
University of Copenhagen, Denmark



17-18 July 2010

...shaping the future, and making a difference to health through quality education in pharmacology worldwide

## Who should attend?

Pharmacology educators and teachers from a wide range of academic departments and schools (medical, pharmacy, dental, basic sciences & other), NGOs, industry, public sector and government. This symposium will be of wide interest to experienced and early stage educators in pharmacology and will provide a highly interactive forum for dialogue and discussion of the latest innovations and technologies that will advance learning and education in the broad discipline of pharmacology.

## What will I learn & benefit?

The programme comprises four interactive workshops on current topics in the pharmacology education (see programme below). Participants will be able to attend two, and attend the feedback sessions of all four. There will also be poster presentations on novel and innovative strategies in pharmacology education.

## Awardees of the Early Educator's Awards

Come to exchange innovative ideas, and be inspired by the awardees of our prestigious "Early Educator's Awards".

Category: Basic Pharmacology  
Dr Suzanne Hansen (PhD)  
University of Copenhagen, Denmark

Category: Basic Pharmacology  
Dr David Gurwitz (PhD)  
Tel-Aviv University, Israel

Category: Clinical Pharmacology  
Dr Robert Likic (MD, PhD, Internist)  
University of Zagreb, Croatia

Category: Teaching for Wider Audiences  
De Wet Wolmarans (BPharm)  
North-West University, South Africa

## More information:

[www.iuphar-teach2010.org](http://www.iuphar-teach2010.org)

## Contact the Organizing Committee:

Co-chair: Prof P.K. Rangachari  
Faculty of Health Sciences,  
McMaster University, Canada  
E-mail: [charl@mcmaster.ca](mailto:charl@mcmaster.ca)  
Tel: +001 905 525 9140 (x21559)

# Satellite Programme

## Saturday, 17 July 2010

- 10:00 – 12:00 Registration  
12:00 – 13:00 Welcome & Opening  
Welcoming Remarks (Joan Lakoski, Pittsburgh, USA)  
**Opening Lecture (Ian Hughes, UK)**  
13:00 – 14:00 Lunch  
14:00 – 16:30 **Session 1** (4x parallel workshops) – *tea break included*
- A) e-Learning and e-Assessment in Pharmacology  
*Facilitators:* David Dewhurst (Edinburgh, UK) - chair, Paul White (Monash, Australia)
  - B) Teaching Pharmacology in a Global Arena  
*Facilitators:* Christiaan Brink (NWU, South Africa) - chair; Roger Moni (Griffith, Australia), David Bylund (Nebraska, USA)
  - C) Active Learning  
*Facilitators:* P.K. Rangachari (McMaster, Canada) - chair, Elizabeth Davis (Monash, Australia), Ewen Macdonald (Kuopio, Finland), James Ziogas (Melbourne, Australia)
  - D) Pharmacology Education for Clinical Students  
*Facilitators:* Simon Maxwell (Edinburgh, UK) - chair, Francis Achike (Int. Med. Univ., Malaysia)
- 16:30 – 17:00 Integrative and Isolated Organ Systems Pharmacology  
**IOSP Introduction**  
(David B. Bylund, Univ. of Nebraska MC, USA)  
Teaching and Learning in Pharmacology: Reversing Reductionism  
19:00 – 22:00 Gala Dinner  
**Careers in Pharmacology**  
(Ole J. Bjerrum, University of Copenhagen, Denmark)  
Outstanding Pharmacology Early Educators' Awards

## Sunday, 18 July 2010

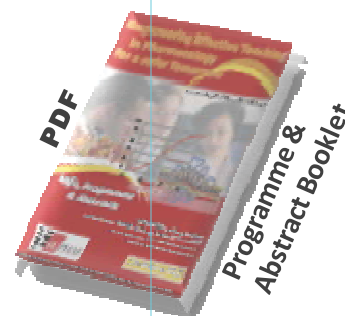
- 09:00 – 11:30 **Session 2** (4x parallel workshops) – *tea break included*  
...repeat of Session 1 (see above) – attend 2<sup>nd</sup> option  
11:30 – 12:30 Report back from all breakout groups  
12:30 – 13:00 Section **General Assembly**  
13:00 – 14:30 Poster Session and Lunch  
Focus on Young Educator entries  
14:30 – 15:00 Closing Remarks

**REGISTER**  
(Satellite only)

**REGISTER**  
(Satellite &  
WorldPharma2010)

[www.iuphar-teach2010.org](http://www.iuphar-teach2010.org)

Co-chair: Prof Christiaan Brink  
Pharmacology, North-West  
University, South Africa.  
E-mail: [Tiaan.Brink@nwu.ac.za](mailto:Tiaan.Brink@nwu.ac.za)  
Tel +27 18 299 2234/26





## PLAN YOUR TRIP: USEFUL LINKS AND INFORMATION

### ***Have you registered for WorldPharma2010?***

[https://www.ics-online.com/EI/getdemo.ei?id=404&s=\\_1AK0PHINZ](https://www.ics-online.com/EI/getdemo.ei?id=404&s=_1AK0PHINZ)

### ***Do you need a visa?***

<http://www.um.dk/en/menu/ConsularServices>

A visa is required for citizens of some countries. Please consult the Danish Embassy or Consulate in your country to find out whether you need a visa. Proof of health insurance policy may be required. Please note that you need to have registered and paid for the congress before a letter of invitation can be issued to you for a visa application.



Denmark's Coat of Arms  
Courtesy of www.Wikipedia.org

### ***Have you booked your flight?*** (Airport code: CPH)

<http://www.worldpharma2010.org/officialcarrier.php>

### ***Have you booked your hotel?***

<http://www.worldpharma2010.org/hotel.php>

### ***Where is the closest tourist information center?***

The Copenhagen Visitor Centre is located at Vesterbrogade 4A, 1620 Copenhagen V, just north of Tivoli Gardens between H.C. Andersen Boulevard and Hammerichsgade/Bernstorffsgade. The office is open 9 a.m. to 8 p.m. Monday through Saturday. Stop by or call (+45) 7022 2442 to obtain maps and advice or visit their webpage at [www.dt.dk](http://www.dt.dk).

### ***What will the weather be like in July?***

The normal July temperatures for Denmark are lows around 15°C/59°F with highs around 20°C/68°F. Copenhagen averages around 60 cm / 24" of rain during the month. A five-day forecast is available at [http://www.dmi.dk/eng/index/forecasts/forecast\\_for\\_copenhagen.htm](http://www.dmi.dk/eng/index/forecasts/forecast_for_copenhagen.htm).

### ***What will be the length of the days?***

During WorldPharma2010, the sun will rise around 4:55 a.m. and set around 9:35 p.m.

### ***Where is smoking allowed?***



Denmark prohibits smoking in nearly all public places, including taxis, public transit, and private businesses such as restaurants, bars, and shops. The exception is an establishment of less than 40 square meters that does not serve fresh food. In addition, a few restaurants and bars have built dedicated smoking rooms for the convenience of their patrons.

## PLAN YOUR TRIP: *USEFUL LINKS AND INFORMATION* (Continued)

### *How are purchases made?*

Danish currency is called the krone (“crown”) when singular and kroner when plural. The most common abbreviation is DKK. Denominations of 50, 100, 200, 500 and 1000 are available. One krone is divided into 100 øre (pronounced “or-ah”). Coins include 1, 2, 5 (each is silver with a hole), 10 (brass), 20 (brass) and 50 (copper) øre.



Most banks are open 10 a.m. to 4 p.m. Monday through Friday. Bureaux de change offer currency exchange during weekends. There are ATMs throughout the city for withdrawals against credit cards.

Some shops, restaurants and hotels will accept euros as a courtesy. If so, their prices will be displayed in both Danish kroner and euros. However, as kroner are the official currency, stores are not required to accept any other currencies.



Be sure to memorize the Personal Identification Number (PIN) for every credit card you plan to take to Copenhagen. Nearly all vendors require it when you pay by credit card. Some will also ask to see a picture identification. Be aware that many stores and restaurants will add the credit card merchant fee to your bill, generally around 2% of the total amount.

Decimals are indicated with commas while thousands are indicated with dots. So, a price listed as 1.234,56 is the same as 1,234.56.

The current Value Added Tax (VAT) rate is 25% and is applied to virtually all goods and services. Non-EU or -Scandinavian citizens are eligible for a refund if a minimum of DKK300 is spent and the goods purchased in Denmark are shipped to another country. Visit [www.globalrefund.dk](http://www.globalrefund.dk) for more information.

### *How much should tips be?*

Service fees are already included in your bill for restaurants, taxicabs, hotels, *etc.* So, only leave a tip if you feel the service provided was exceptional.

### *How are telephone numbers dialed?*

To make a domestic call while in Copenhagen, dial all eight digits of the Danish telephone number as there are no area codes. To make an international call, first dial 00 then the country code and telephone number. The country code to dial Denmark is +45.



## PLAN YOUR TRIP: *USEFUL LINKS AND INFORMATION* (Continued)

### *What time is it?*

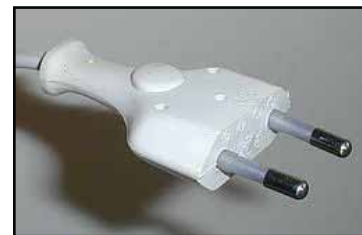
Denmark uses the 24 hour clock system. “Klokken” means “o’clock” and is abbreviated as “kl”. So, “kl 17:30” would be 5:30 p.m.

### *How do you catch a taxicab?*

Taxis can be hailed from the street or a stand in most parts of town. If the green “Fri” light is on, then the taxi is available. Be sure the taximeter is turned on when the ride begins to ensure the fare is regulated. Most meters begin at DKK24 (from the street) or DKK37 (if called to a location). The typical fare from airport (Kastrup) to central Copenhagen is DKK150 - 200 and the tip is included in the fare. Most major credit cards are accepted. Luggage might cost extra.

### *What is the electrical currency?*

Denmark utilizes the “europlug” with two round pins, that supplies 220 volts, 50-60 Hz cycle alternating current. Some hotels also offer 110-volt power plugs. Adapters and transformers can be purchased in advance or in Copenhagen. If you’re unsure if you have the right adaptor or transformer, inquire with your hotel before plugging in valuable electronics.



### *Is the water safe to drink?*

Yes, tap water is safe to drink throughout Denmark. However, many restaurants charge for it.

### *Where can medical attention be found?*



A pharmacy (“apotek”) can be a good place to start if the problem is minor and can be readily described. Normal business hours are 9 a.m. to 5:30 p.m. Monday through Thursday and 9 a.m. to 1 p.m. on Saturdays. A list of 24 hour pharmacies can be found at <http://denmark.usembassy.gov/health-medical.html>.

If the problem is severe, call +45 7013 0041 to receive a referral to a doctor on call. Or visit the City General Practice & Travel Medicine (7027 5757; Ny Østergade - behind the Hotel d’Angleterre). English is spoken.

These hospitals offer 24-hour emergency wards:

- Amager Hospital (3234 3234; Italiensvej 1)
- Bispebjerg Hospital (3531 3531; Bispebjerg Bakke 23)
- Frederiksberg Hospital (3816 3816; Nordre Fasanvej 57)

For all *emergencies* - fire (“brand”), police (“politi”), or ambulance - *dial 112* from any pay or mobile telephone. Remember to speak slowly and clearly. ●

# THERE'S SOMETHING FOR EVERYONE IN COPENHAGEN!

## Friday, July 16th

- **Tivoli Gardens** ([www.tivoli.dk](http://www.tivoli.dk)) presents a free concert by “Turboweekend + Outlandish” at 10 p.m. with a paid admission to the park. Hours of operation are 11 a.m. to 11 p.m. Sunday - Thursday and 11 a.m. to midnight on Friday and Saturday. The rides open at 11:30 a.m.
- **Stevie Wonder** gives a rare live performance in the Parken Stadium (<http://parken.dk/script/site/page.asp?artid=1>) at 8 p.m.
- The **Museum of Copenhagen** ([www.copenhagen.dk/en](http://www.copenhagen.dk/en)) is open 10 a.m. to 5 p.m. daily and is currently featuring a special exhibit on bicycles. Fridays are free admission.
- Go swimming in Copenhagen Harbor. Inside *Havneparken*, “Harbor Park” (<http://en.wikipedia.org/wiki/Havneparken>) just south of the Langebro Bridge, the Islands Brygge basin accommodates 600 people. The floating Copecabana, near the Fisketorvet shopping mall, offers three separate basins and life guards. Admission is free. Open daily 7 a.m. to 7 p.m., weather permitting.



Courtesy of [www.copenhagen.dk](http://www.copenhagen.dk)

## Saturday, July 17th

- Free bicycles ([www.bycyklen.dk/english/thecitybikezone.aspx](http://www.bycyklen.dk/english/thecitybikezone.aspx)) are available through the Bycyklen Kobenhavn, “Bicycle Copenhagen”, program. Locate one of the 125 bike parking lots in central Copenhagen. Leave a DKK20 deposit then ride the bicycle within the central zone. Remember to stay in the designated bicycle lanes, although you may walk the bicycle in pedestrian lanes. Return the bike to any one of the 110 city bike-racks before dark to retrieve your deposit.
- The outdoor **Gammel Strand Antique Market** is near Christiansborg Slotskirke and the old canal. Specializing in collectables, it’s open Fridays and Saturdays.
- The **Tycho Brahe Planetarium** ([www.tycho.dk](http://www.tycho.dk)) provides not only *The Active Universe*, an astronomy exhibit, but runs 3D IMAX movies all day. Headphones for English narration are available for DKK20. Open every day from 9:30 a.m. to 9 p.m. except Mondays, when the Planetarium is open from 11:30 a.m. to 9 p.m.
- Explore **Field’s Shopping Center** ([www.fields.dk](http://www.fields.dk)), one of the largest malls in Scandinavia with 150 stores and 20 restaurants. It’s open 10 a.m. to 8 p.m. weekdays and 10 a.m. to 5 p.m. on Saturdays.



Courtesy of [www.tycho.dk](http://www.tycho.dk)

## SOMETHING FOR EVERYONE (CONTINUED)

### Sunday, July 18th

- The **Ny Carlsberg Glyptotek** ([www.glyptoteket.dk](http://www.glyptoteket.dk)), an internationally known art museum in the heart of Copenhagen, features bronze statues by Degas and paintings by Købke. English tours are at 2 p.m. on Wednesdays and Sundays. Hours are 11 a.m. to 5 p.m. Tuesday - Sunday. Admission is free on Sundays.
- The annual **Grøn Koncert** ([www.groenkoncert.dk](http://www.groenkoncert.dk)), “Green Concert”, draws 40,000 people each year. This music festival is in Danish and will be held in Valby Parken near Åparken station from 1 p.m. until 9:30 p.m. Tickets are available through Billnet, on-line and at post offices. Bring a picnic to enjoy on the lawn.
- Denmark is the only country where all three government branches (Parliament, Supreme Court, and Prime Minister) are located in one building, the **Christiansborg Palace** (<http://christiansborgslot.dk>). Daily English tours are at 11 a.m., 1 p.m. and 3 p.m. Built in 1167, the ruins of Bishop Absalon’s Castle are below the palace and open 10 a.m. to 4 p.m. The Royal Stables house the horses in a wing from the original structure. It’s open 2-4 p.m. Saturday and Sunday.



### Monday, July 19th

- Preregistration is necessary for the **World Santa Claus Congress** ([www.worldsantaclauscongress.com](http://www.worldsantaclauscongress.com)) being held July 19 - 21 at Dyrehavsbakken ([www.bakken.dk](http://www.bakken.dk)), “Deer Park”. Located just north of Copenhagen, **Bakken** is the world’s oldest amusement park. The park is open 9 a.m. to 5 p.m. Monday - Thursday and 9 a.m. to 4:30 p.m. on Friday.
- Shop along **Strøget**, the world’s longest pedestrian street, from City Hall Square (Rådhuspladsen) to Kongens Nytorv. The more affordable shops are at the Rådhuspladsen end. Most are open 10 to 6 p.m. Monday - Thursday, 10 a.m. to 7 p.m. on Fridays, and 10 a.m. to 4 p.m. on Saturdays.

## SOMETHING FOR EVERYONE (CONTINUED)

### Tuesday, July 20th

- The kids will love the hands-on science center, **Experimentarium** ([www.experimentarium.dk](http://www.experimentarium.dk)), that is open until 9 p.m. on Tuesdays. Hours are usually 9:30 a.m. to 5 p.m. weekdays, 11 a.m. to 5 p.m. weekends.
- The **National Museum** ([www.nationalmuseet.dk](http://www.nationalmuseet.dk)), also known as the Prince's Palace, offers free guided tours in English at 11 a.m. on Tuesdays, Thursdays and Sundays. Open 10 a.m. to 5 p.m. Tuesday - Sunday. Admission is always free.
- **Toto** takes the stage at KB Hallen ([www.kbhallen.dk](http://www.kbhallen.dk)) at 8 p.m.



Courtesy of [www.experimentarium.dk](http://www.experimentarium.dk)

### Wednesday, July 21st

- The **Hirschsprung Museum** offers one of the finest collections of older Danish paintings and sculptures. Admission is free on Wednesdays. Hours are 11 a.m. - 4 p.m. Wednesday - Monday.
- **Fredensborg Castle Church**, in nearby Helsingør, hosts a free concert at 5:30 p.m. by Ellen Christiansen of the Royal Danish Academy of Music and organist, Jette Mogensen ([www.castleconcerts.dk](http://www.castleconcerts.dk)).
- **Hugh Masekela**, billed as the Louis Armstrong of South Africa, performs jazz at the Tivoli Gardens at 8 p.m. Tickets are available at [www.billetnet.dk](http://www.billetnet.dk).
- The **National Gallery of Denmark** ([www.smk.dk](http://www.smk.dk)) is open until 8 p.m. on Wednesdays. Hours are 10 a.m. to 5 p.m. Tuesday - Sunday. Admission is free for the permanent collection, which specializes in art in nearly every medium.
- Ever wanted to touch a live fish? Now you can at the touch pools in the **Denmark Aquarium** ([www.akvarium.dk](http://www.akvarium.dk)). The Aquarium is open until 8 p.m. on Wednesdays. Hours are 10 a.m. to 6 p.m. the rest of the week.

### Thursday, July 22nd

- The **Cisternerne Museum of Modern Glass Art** ([www.cisternerne.dk/index1.htm](http://www.cisternerne.dk/index1.htm)) was built into the old water cisterns below the Søndermarken public park. It's open 2 - 6 p.m. Thursday - Friday, 11 a.m. - 5 p.m. Saturday - Sunday. The featured exhibit, "Flow Glow", are molten glass sculptures by Göran Wärff.
- The **Louisiana Museum of Modern Art** ([www.louisiana.dk](http://www.louisiana.dk)) is open 11 a.m. to 10 p.m. Tuesday - Friday and 11 a.m. to 6 p.m. Saturday - Sunday. This summer's exhibit of Andy Warhol and Edvard Munch originals is a unique opportunity for abstract art lovers.

Continued on page 28...



## SOMETHING FOR EVERYONE (CONTINUED)

### Thursday, July 22nd (continued)



Courtesy of <http://members.virtualtourist.com/m/p/m/2c2461>

- The **Carlsberg Visitor's Center** ([www.visitcarlsberg.dk](http://www.visitcarlsberg.dk)), home of one of the oldest breweries in Scandinavia, stays open until 7:30 p.m. on Thursdays. Closed on Mondays, it's open 10 a.m. to 5 p.m. the rest of the week. Admission includes two glasses of the famous beer at the conclusion of the 90 minute tour.

### Friday, July 23rd

- **Tivoli Gardens** ([www.tivoli.dk](http://www.tivoli.dk)) presents a free concert by "Dúné" at 10 p.m. with a paid admission to the park.
- **Missy Elliot**, the only female rapper with six platinum albums, will rock the VEGA House of Music at 8 p.m. Tickets are available at <http://vega.dk/presentation-of-vega.html>.

### Saturday, July 24th

- Catch one of Grammy award winner **P!nk**'s explosive performances at 4:30 p.m. in the Parken Stadium, "Stadium Park", (<http://parken.dk/script/site/page.asp?artid=1>).
- Play a round - or two - of **golf**. Options range from 3-par 9-hole courses to challenging narrow fairways with plenty of water hazards. Several Pay & Play clubs are available and nearly all offer club rental. Visit [www.visitcopenhagen.com](http://www.visitcopenhagen.com) "What To See and Do" then click on "Sports & Activities" to locate a course of interest and reserve a tee time.

### Sunday, July 25th

- The **Copenhagen Summer Festival of Chamber Music** runs through August 5th. ([www.copenhagensummerfestival.dk](http://www.copenhagensummerfestival.dk)) Internationally acclaimed violinist, Ray Chen, is the opening concert at 4:30 p.m. ●

## IN MEMORY

**PROF. MUDR. DR.H.C. HELENA RAŠKOVÁ, DRSC.**  
**January 2, 1913 – April 13, 2010**



Prof. Helena Rašková, a distinguished founder of the post-World War II Prague School of Pharmacology, and a legendary, internationally-recognized figure in the field, died recently in Prague at the age of 97. The global status of Czech and Slovak Pharmacology in the second half of the 20<sup>th</sup> century is inseparably connected with Prof. Rašková. In the post-war decades she initiated and later influenced all activities concerning not only Czechoslovak pharmacological research but also a great number of national pharmacotherapeutic strategies. Her Prague pharmacological “nest” produced numerous generations of Czech and Slovak pharmacologists, many of whom became highly regarded scientists either in their homeland or abroad. Her efforts continue to influence the discipline far beyond her native Central Europe.

Prof. Helena Rašková came naturally to a career in medicine as both of her parents were physicians. Born in Zürich of a Czech father and a Russian mother, she was married to Prof. MUDr. Karel Raška, DrSc., a distinguished epidemiologist and a principal organizer of international epidemiological projects for the World Health Organization. After graduating from Charles University in 1937, Prof. Rašková took a position in the Department of Internal Medicine in Prague. When Czech universities were closed by the German occupying forces in 1939, Prof. Rašková began work at one of the few Czech pharmaceutical firms of that time, a company headed by Dr. Fragner in Prague. It was there that she first became interested in pharmacological research, which became her life-long passion. The scientists hired by Dr. Fragner from the closed university formed the nucleus of a multidisciplinary

*Continued on page 30...*



## IN MEMORY PROF. MUDR. DR.H.C. HELENA RAŠKOVÁ, DRSC. (continued)

research team at his pharmaceutical firm. This group attempted to produce an original antimicrobial agent as a substitute for penicillin.

Immediately after the war and the reopening of the universities, Prof. Rašková began work in the Department of Pharmacology of the Faculty of Medicine, Charles University. At the Purkyně Institute at Albertov in Prague, Prof. Rašková, who was appointed Associate Professor in 1948, assembled a group of collaborators from scientists in academia, industry and the State Pharmaceutical Control Institute. The international contacts she established when the frontiers re-opened after the war enabled her to begin to upgrade Czech experimental pharmacology to world standards. This was no small task given the fact that at that time training in the field had been suspended for years and there was a dearth of modern equipment available for this initiative. Nonetheless, her efforts ultimately contributed significantly to the “international drug explosion”.

As Prof. Rašková managed to maintain contacts with distinguished scientists in Western Europe, even after the Iron Curtain was lowered in 1948, she managed to keep Czechoslovak pharmacology in touch with the latest advances in the field. As a number of Eastern European pharmacologists were aware of the activities, Prof. Rašková and the Prague pharmacologists became an informal center for bridging cold-war barriers. Thanks to the inimitable Raškovesque tactics, pharmacological research during 1950's and 1960's fused the best of both Western- and Eastern-European pharmacological techniques.

Prof. Rašková's notorious sense for identifying areas ripe for exploitation provided direction for her team in making important discoveries in neuro- and cardiovascular pharmacology, as well as in the areas of inflammation and the identification and characterization of bacterial toxins. Indeed, her 1958 monograph, *Pharmacology of Some Toxins*, remained an international reference on the topic for quite some time. Her efforts in helping develop biochemical pharmacology led to new insights on the biodistribution and biotransformation of xenobiotics, and to advances in the mathematical modelling of pharmacokinetics.

**IN MEMORY**  
**PROF. MUDR. DR.H.C. HELENA RAŠKOVÁ, DRSC.**  
(continued)



Prof. Rašková and Uvnäs in August 1987, Sydney, Australia

At the end of 1950s, and beginning of the 1960s, together with the Swedish scientist Prof. Börje Uvnäs, Prof. Rašková founded the organization that would become the International Union of Pharmacology (IUPHAR). During several terms of office, she held the distinguished posts of First Vice-President and Secretary-General in the IUPHAR presidium.

Prof. Rašková's success in fostering pharmacology was recognized in 1963 when Prague hosted the 2<sup>nd</sup> World Pharmacology Congress. This was the first event of this kind to be held behind the Iron Curtain. For the thousands of foreign pharmacologists who attended

this meeting, it is recalled as one characterized by its frank and friendly atmosphere, as well as the quality of science that can be pursued regardless of politics. For Czech pharmacologists, this congress was a stepping stone for obtaining fellowships and training opportunities at top research laboratories in the West. The dominant factor in all these international, and later, national initiatives, was, of course, Prof. Rašková, with her tireless enthusiasm, talent for languages and tremendous fund of knowledge. She possessed the courage to stand up for many scientists who in the political climate of the period had to contend with various difficulties because of their social origin or personal beliefs. Thanks to Prof. Rašková, the Czechoslovak pharmacological school of the 1960s and the early 1970s became a distinguished international entity.

Besides her achievements in experimental pharmacology, Prof. Rašková also contributed to the development of European toxicology. Soon after the thalidomide tragedy in the early 1960's, she was instrumental in the establishment of the European Society for Drug Toxicity, the predecessor of the present EUROTOX. Thanks to her influence and efforts, European-wide conferences on toxicology were held in Prague (1967) and Karlovy Vary (1974), Czechoslovakia.

After the Soviet occupation of Czechoslovakia in 1968, Prof. Rašková and her husband spend two decades out of favour with those in power. This resulted in their being forced to abandon the institutions and laboratories they helped establish. Because of her dedication and resilience, Prof. Rašková went from conducting research and teaching human pharmacology to undertaking studies in veterinary pharmacotherapy, with a particular emphasis on exploring new approaches for the treatment of diarrheal diseases in calves.





## IN MEMORY

### PROF. MUDR. DR.H.C. HELENA RAŠKOVÁ, DRSC. (continued)

A brief summary of Prof. Rašková's activities include:

- Established an independent Pharmacological Institute of the Pediatric Faculty of Charles University as well as the Pharmacological Institute of the Czechoslovak Academy of Sciences. She was director of the latter until 1970.
- On her initiative, the Bratislava branch of the Pharmacological Institute of the Czechoslovak Academy of Sciences gradually separated, giving rise to the present Institute of Experimental Pharmacology of the Slovak Academy of Sciences.
- Established the Czechoslovak (predecessor of the Czech) Pharmacological Association as a component of the Purkyně Medical Society (1959). Prof. Rašková, served as Chair of the Association for two decades before being named Honorary Chair.
- An honorary member of a number of foreign professional societies, and recipient of two honorary doctorates, several medals from European universities, the Gold Medal of the European Pharmacological Society, and other numerous other awards and honours.

Prof. Rašková's contributions to Czech and world pharmacology were remarkable and lasting. Her students and colleagues are moved when recalling how she continued to stimulate them through her infinite optimism and bold ideas until the last moments of her life. ●

Jaroslav KVĚTINA  
A former disciple  
of Prof. Rašková

and

Vladimír GERŠL  
Chair  
Czech Pharmacological Society



*On January 16, 2008, family and friends celebrated Prof. Rašková's 95th birthday with warm wishes, flowers, and a cake in the shape of a white mouse.*

# **2010 Anniversaries**

**IUPHAR congratulates the following member societies:**

American Society for  
Clinical Pharmacology and Therapeutics  
1900-2010

German Society for Experimental and  
Clinical Pharmacology and Toxicology  
1920-2010

Danish Society of  
Pharmacology and Toxicology  
1945-2010

Armenian Pharmacological Society  
1960-2010

Polish Pharmacological Society  
1965-2010

Swiss Society of Pharmacology and Toxicology  
1965-2010

Spanish Society of Clinical Pharmacology  
1985-2010

Federation of European Pharmacological Societies  
1990-2010

Austrian Pharmacological Society  
1995-2010

Cuban Society for Pharmacology  
1995-2010

International Society of Pharmacovigilance  
2000-2010

Safety Pharmacology Society  
2000-2010



## Milestone Anniversaries

### THE ARMENIAN PHARMACOLOGICAL SOCIETY IS 50 YEARS OLD

It has been 50 years since the formation of the Armenian Pharmacologist Scientific Public Organization (APSPPO). Originally named the Armenian Pharmacological Society, the organization was founded in 1960 by the Soviet pharmacologist, Professor Simon A. Mirzoyan. He was also the founder of the pharmacological school of Armenia and head of the pharmacology department of the Yerevan State Medical Institute, a corresponding member of the Armenian National Academy of Sciences. The establishment and development of the Society would not have been possible without the dedicated efforts of Academician Mirzoyan, who paid particular attention to the development of young scientists in the field.



The delegation of the Soviet Union pharmacologists in the 5th International Congress of Pharmacology, San Francisco, 1972. L → R: Academician Simon Mirzoyan, Academician Vasilij Zakusov, Docent Nina Hakobyan and Academician Emil Gabrielyan

Members of the society include leading Armenian scientists in medical and veterinary pharmacology, as well as toxicologists and biochemists. Individuals numbered among these groups include Academician E.S. Gabrielyan, Academician V.P. Hakobyan, Professor S.Sh. Sakanyan, Professor O.M. Avagyan, Professor R.G. Boroyan, Professor E.S. Sekoyan, Professor E.A. Amroyan, Professor T.L. Virabyan, Professor T.S. Tatevosyan, Professor V.M. Samvelyan, and Professor A.G. Panossyan among other distinguished members of the Armenian scientific community. In 1984 the independent Society of Toxicology was formed, with the APS being primarily composed of pharmacologists working in academic and scientific organizations.

The APSPPO has contributed significantly to the development of the pharmacological sciences in Armenia. Over the years, areas of particular interest to the membership have included the pharmacology of cerebral and coronary blood circulation, of the vascular wall and blood cells, and of the autonomic nervous system. Focus has been placed on several drug classes, such as antianginals, antiarrhythmics, cardiotonics, psychotropic, and herbal medicines.

## THE ARMENIAN PHARMACOLOGICAL SOCIETY IS 50 YEARS OLD (continued)

Since 1993, the APSPO has been headed by Emil Gabrielyan, one of the leading Armenian pharmacologists and director of the Scientific Center of Drug and Medical Technology Expertise (SCDMTE) of the Republic of Armenia. His scientific interests include cerebral blood circulation and, more recently, angiohemis homeostasis, the pharmacological regulation of blood circulation, and herbal medicines.

The APSPO activities are overseen by the Presidium, which is composed of famous pharmacologists who are elected every 4 years by all the members of the society. Topics covered during the Presidium meetings, which are held 2 to 3 times a year, include discussions of the strategic goal of the Society and reviews of annual reports. There are typically 4 or 5 APSPO meetings each year. These gatherings include scientific and survey reports, as well as reviews and approvals of doctoral dissertations.

Until 1991 the APSPO was an active member of the Scientific Society of Pharmacologists of the USSR. Armenian pharmacologists not only participated in different conferences and congresses held in the Soviet Union, but the APSPO members organized a number of the scientific forums in Armenia. The Fifth Congress of the Pharmacologists of the Soviet Union was held in 1982 and organized by the APSPO. Meeting participants included scientists from Germany, Hungary, Czechoslovakia, France, Italy, and England. Other meetings sponsored by APSPO include an all-USSR conference of physiology, pathophysiology and pharmacology of cerebral blood circulation (1984), and an all-USSR conference on the role of prostaglandins in physiology and pathophysiology of blood circulation (1980).

At present APSPO is an independent scientific society, with approximately 80 members. This group is populated by basic and clinical pharmacologists, pharmacists, chemists, pathophysiological, physicians, biochemists and others interested in the discipline. Notables among the active members of the society are S.M. Azatyan, A.V. Topchyan, M.G. Balasanyan, G.L. Aslanyan, A.V. Baykov, N.R. Mirzoyan, and I.A. Djaghatspanyan.

The members of APSPO actively participate in national and international pharmacological forums and their work is published in many international journals. Many leading pharmacologists of the republic have participated in almost all the World Congresses of Pharmacology, including the 5th (San-Francisco, 1972), 6th (Helsinki, 1975), 7th (Paris, 1978), 8th (Tokyo, 1981), 9th (London, 1984), 12th (Montreal, 1994), 13th (Munich, 1998), 14th (San Francisco, 2002), and 15th (Beijing, 2006). Moreover, APSPO members were active participants in the 1st International Society of Pathophysiology (Moscow, 1991), the Soviet-Italian symposium on Neuropsychopharmacology (Moscow, 1990), the 1st European Congress of Pharmacologists (Milan, 1995), and the 9th Congress of the European Association for Clinical Pharmacology and Therapeutics (Edinburgh, 2009).



## THE ARMENIAN PHARMACOLOGICAL SOCIETY IS 50 YEARS OLD (continued)



The delegation of the Armenian pharmacologists at the 13th International Congress of Pharmacology, Munich, 1998. L → R: Docent Liza Balyan, Academician Vilen Hakobyan, Professor Alexander Panossyan, Docent Karine Melkonyan, Professor Elmira Amroyan, Academician Emil Gabrielyan, docent Anahit Ayyazyan.



Armenian pharmacologists published more than 30 books and monographs and more than 3000 scientific papers in different international scientific journals, such as *The Lancet*, *Planta Medica*, *Atherosclerosis*, *European Journal of Pharmacology*, *Acta Physiology et Pharmacology Bulgarica*, *Journal Neurology*, *European Journal of Clinical Pharmacology and Therapy*, *Canadian Journal of Physiology and Pharmacology*, *Science in USSR*, *Soviet Medical Review*, *Journal of Neuropharmacology*, *Journal of Neuropathology and Psychiatry*, *Findings of Psychological Sciences*, *Pharmacology and Toxicology*, *Newsletter on Experimental Biology and Medicine*, *Chemico-Pharmaceutical Journal*, *Issues on Medical Chemistry*, as well as others.

The society members have produced and published numerous pharmacology textbooks. In 1989 Pharmacology, a textbook for medical students, was released in Armenian. At the request of Euro Bureau of the World Health Organization, APSPO members compiled and published in 1991 the Guide on Pharmacotherapy for Physicians and Pharmacists in Russian for those countries of the Commonwealth of Independent States. Other scholarly publications by APSPO members include the 2001 National Formulary on Herbal Medicines in Armenian and in Russian, the 1997 Armenian National Formulary (second edition in 2006), the Handbook on Essential Medicines of RA, and the 2010 educational handbook Pharmacology of Psychotropics and Analgetics in Armenian intended for physicians and medical students.

Continued on page 37...

# THE ARMENIAN PHARMACOLOGICAL SOCIETY IS 50 YEARS OLD (continued)

The primary activities of APSPO are directed towards assisting in the growth and development of young pharmacologists in Armenia. Today, due to the efforts of the APSPO, many young Armenian scientists are working in laboratories around the world, including those in the USA, Switzerland, Sweden, France, and Australia.

As a contribution to public health, the APSPO is also heavily involved in designing drug policy in Armenia. Thanks in particular to the efforts of APSPO President E. Gabrielyan, and with the assistance of, and close coordination with WHO, the organization members help formulate drug policy for Armenia. This includes formulation of legislation and of policies to ensure quality control, the security of the drug distribution system, and public access to medications. The APSPO members assist in devising principles for rational drug use, in creating pre- and postgraduate courses for physicians and pharmacists, and in providing objective information on the pharmaceutical sciences for health specialists and others. The APSPO is also involved in the nation-wide effort to combat against the production and importation of counterfeit medications. To this end, the APSPO is collaborating with many international organizations, such as the World Health Organization, the Food & Drug Administration, the European Medicines Evaluation Agency, the Uppsala Monitoring Centre, the European Pharmacopoeia Commission, the Coalition for Rational and Safe Use of Medicines and others. In 1998 the APSPO was elected to IUPHAR membership.

It is the hope of the APSPO leadership and members that their continued efforts, coupled with a favorable political climate, that the vigorous activity of the members of our society and favourable political changes will foster the rise of pharmacology research here and abroad, and will help improve public health, the ultimate goal of our Society and discipline. ●

Anahit Ayvazyan  
Secretary General of APSPO





## Milestone Anniversaries

### SPANISH CLINICAL PHARMACOLOGY SOCIETY SILVER ANNIVERSARY



This year the Spanish Clinical Pharmacology Society (SEFC) celebrates its silver anniversary. Since its founding in 1985, the Society has grown from a small group of enthusiastic specialists, into an organization

representing the interests of hundreds of scientists in an established medical discipline. Even though Harry Gold first coined the term clinical pharmacology at the end of the 1920's, and Louis Lasagna established the first Clinical Pharmacology Department at Johns Hopkins in 1954, it was many years before this specialty took root in Spain. The first attempt to include clinical pharmacology in the study of medicine in Spain was made in 1932 by Professor Teófilo Hernando but it was not until 1993 that the topic was finally included as a required course in Spanish medical curricula. The Marqués de

Valdecilla Hospital in Santander was the first in Spain to create a Department of Clinical Pharmacology with its own separate functions in 1974. That was followed in 1978 by the recognition of clinical pharmacology as a formal

Pharmacology  
International

June 2010

#### SANTANDER PRIMER ENCUENTRO DE FARMACOLOGOS CLINICOS DE HOSPITAL



**SANTANDER.** (Del corresponsal de TRIBUNA MEDICA.)—Organizado por el Departamento de Farmacología Clínica del centro médico nacional M. de Valdecilla, ha tenido lugar en Santander una reunión de trabajo que agrupó por primera vez a los farmacólogos clínicos de hospitales. Sus objetivos fueron revisar la formación de médicos residentes en farmacología clínica, con la experiencia adquirida desde que se aprobó la nueva ley de Especialidades, y sentar las bases de una estrecha colaboración entre los distintos servicios de farmacología clínica mediante el establecimiento de programas comunes.

La farmacología clínica es una nueva especialidad médica, iniciada en España desde hace pocos años siguiendo la experiencia de otros países y las recomendaciones de la OMS. A pesar de la necesidad de su existencia no sólo en los grandes hospitales, sino también en los hospitales comarcales, centros de salud, ambulatorios, industria farmacéutica y en la Administración, y de que se haya admitido y establecido un programa de

Los temas sobre colaboración entre servicios de farmacología clínica debatidos fueron:

1. Colaboración en la formación de residentes.
2. Colaboración en la realización de programas comunes en algunas actividades propias de la farmacología clínica (determinación e información de niveles plasmáticos de fármacos y parámetros farmacocinéticos, política hospitalaria de fármacos, farmacovigilancia,

pericia de que la Administración se ha resistido a dotar plaza alguna en ningún centro, condenando a un paro inmediato a los primeros residentes formados en esta especialidad. La especialidad no sólo no está saturada, sino que se ha previsto que, en el mejor de los casos, seguirá siendo deficiente en los próximos diez años.

En la reunión celebrada en Santander han participado representantes de Barcelona, Cádiz, Granada, Madrid, Oviedo, Pamplona, Salamanca, Santander, Sevilla, Tenerife, Valencia, Valladolid y Zaragoza. El Departamento de Farmacología Clínica de Santander presentó un borrador de trabajo elaborado por el doctor Juan A. Armijo con la colaboración del doctor José F. Horga, que había sido enviado previamente a los participantes para su estudio.

Los temas debatidos sobre la formación de residentes fueron:

1. Delimitación de las actividades propias de la farmacología clínica en la que residentes deben realizar su formación.
2. Calendario del rotatorio durante los cuatro años de la especialidad.
3. Evaluación de la experiencia obtenida en el desarrollo del programa teórico y práctico.
4. Fuentes bibliográficas comunes, reuniones para abordar dicha formación.
5. Revisión de la organización y métodos aplicables a la formación de residentes.
6. Requisitos a tener en cuenta en la concesión del título de especialista.

Por último, se planteó la problemática actual sobre la dotación de plazas en farmacología clínica.

A lo largo de las sesiones se insistió en la necesidad de que la formación médica y farmacológica de estos especialistas sea la adecuada para que puedan influir decisivamente en la necesidad mejorada en la práctica de la utilización de medicamentos por su consejo prudente y experto a la hora de atender las consultas terapéuticas de sus colegas en los centros sanitarios de todos los niveles; por su capacidad de apreciar el valor o el peligro de nuevos medicamentos para las diversas indicaciones médicas; por su capacidad de recomendar a consultas de la Administración y de la industria farmacéutica; por su conocimiento de la epidemiología ligada al consumo de los medicamentos y a sus efectos benéficos y tóxicos; por su experiencia en el diseño y control de los ensayos clínicos.

Los farmacólogos clínicos de hospital mostraron el deseo de hacer llegar a la nueva Administración su voluntad de contribuir a modificar sustancialmente el condado abuso introducido en la prescripción y utilización de medicamentos. Consideran que es un derecho infrautilizar su especialidad que tan brillante papel está realizando en otros países en que ha sido totalmente incorporada, tanto en los órganos de decisión de política medicamentosa como en los centros de prescripción de medicamentos.

J. P. POO

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The first meeting of clinical pharmacologists in 1984 was reported in the *Tribuna Medica*.

Continued on page 39...

# SPANISH CLINICAL PHARMACOLOGY SOCIETY SILVER ANNIVERSARY (continued)



The participants of the first course in 1982 on Therapeutic Drug Monitoring in Santander. L → R: Back Row - Juan Vicente Esplugues (Valencia), Juan A. Armijo (Santander), Roberto Saucedo Sánchez (Granada) Román Valiente Domingo (Santander), Rafael Cuenca Boy (Pamplona), Middle Row - Virgilio Macho Montoya (Santander), Angeles de Cos Cossio (Santander), Regina Bello Sáez (Valencia), Joseph Torrent Farnell (Barcelona), Emilio J. Sanz Alvarez (La Laguna), Front Row - Jesús Frias Iniesta La Paz (Madrid), and Luisa Camon Solsona (Barcelona)

medical speciality, requiring three years of training for certification. The training experience was extended to four years in 1984. The Spanish Clinical Pharmacology Society was founded in 1985 with the mission of improving patient care by identifying improved pharmacotherapies and perfecting their use.

Since the initial meetings of the SEFC, its membership and activities have expanded. Its primary objective is to disseminate information to appropriate professional organizations about the effects and proper use of medications with the aim of improving patient care. Efforts are also made to forge collaborative associations with related international societies to strengthen the discipline. The Society is characterized by its modest resources and its highly motivated members. The SEFC committees are composed of highly qualified scientists and clinicians who donate their time in addressing complex and important issues relating to the pharmacological management of disease. Some of the key individuals responsible for the development and success of the SEFC over the past 25 years include Professors Alfonso Moreno, Joan Ramón Laporte, Pau Salvá, Nicolás Boada, Africa Mediavilla, and Antonio Portolés.



During a meeting in 2005 SEFC officers Alfonso Moreno (at left) and Africa Mediavilla (middle) visited with Antón Herreros (at right), Director of the Foundation for Health Research of Spain.

In the early 1990's a bulletin devoted to Clinical and Bioethical Research (*ICB*) was launched. This has become the chief outlet for information on the discipline in Spain. Subsequently the bulletin went digital (*ICB Digital*) and, more recently, it has been published as an addendum to the renowned journal *Medicina Clínica*. In 2001, the Treatment and Care Guide for Residents in Clinical Pharmacology was published. This project involved the active participation of the majority of teaching hospitals in Spain to compile a useful text for training and orienting resident physicians.





## SPANISH CLINICAL PHARMACOLOGY SOCIETY SILVER ANNIVERSARY (continued)

Notable achievements of the SEFC and its members include the launching twenty years ago of multicenter collaborative studies, the organization and execution of clinical trials on analgesic treatment



SEFC Congress 2004 (Santander, Cantabria, Spain). L → R: Caridad Pontes (secretary), Ferrán Torres (treasurer), Africa Mediavilla (president), Cristina Avendaño and Antonio Portolés (councilors).

for renal colic, and the ground-breaking study on the use of drugs during pregnancy and breast-feeding. More recently, SEFC members have been involved in multicenter studies on the use of immunoglobulins and antifungals in hospitals in Spain.

Since 1982 there have been a number of courses in drug level monitoring at Santander, which has now trained generations of specialists. In 2004, the Spanish national conference was organized in Santander during the SEFC presidency of Professor Africa Mediavilla, whose infectious enthusiasm touched every member of the Society.

The SEFC has strong ties to other Spanish and European societies. Indeed, the composition of the European Association for Clinical Pharmacology and Therapeutics (EACPT) features significant Spanish contributions, with three SEFC members, Drs. Joan Ramón Laporte, Nicolás Boada and Gonzalo Calvo serving on past and present EACPT Executive Committees. In 2006 the SEFC was admitted as a member of IUPHAR.

The SEFC has sponsored workshops on various aspects of clinical pharmacology. These included discussions of the implementation of European Directives on Clinical Trials and integration into the European Clinical Infrastructure Network. Other workshop topics have included support to the Clinical Research Ethics Committee, professional appointments, and residents' training. The Society has also worked with the Spanish Drug Agency and the Spanish Ministry of Health in establishing policies relating to drug approval and use.

*Continued on page 41...*

# SPANISH CLINICAL PHARMACOLOGY SOCIETY SILVER ANNIVERSARY (continued)



6th EACPT Summer School held in 2008 at El Escorial, Madrid.  
L → R: Gonzalo Calvo (Vice President), Antonio Portolés (President),  
Ingolf Cascorbi (EACPT President), and Carmen Pozo (AEM Speaker)

The SEFC has organized 22 national conferences and numerous training courses, among them the EACPT Summer School in 2008, which was also featured in the Complutense University of Madrid Summer Program at El Escorial.

Soon the Society will begin preparing for the 14<sup>th</sup> EACPT Congress to be held in Madrid during 2015, which was awarded to the SEFC during the recent Edinburgh Congress. The latest national SEFC conference

was held in Badajoz. Presided over by Prof. Adrián Llerena, the gathering included an unusual number guest speakers from throughout Europe and Latin America, indicating the increasing global reach, and impact, of the organization and its activities.

The current SEFC Executive Committee is composed of Drs. Alberto Borobia, Angeles de Cos, Magí Farré, Joaquín Delgadillo, José Ríos (Treasurer), Esther Prieto (Secretary), Gonzalo Calvo (Vice President), and Antonio Portolés (President). This group endorses the call for increased commitment and enthusiasm engendered by the challenge of organizing the 2015 EACPT Congress.



The delegates for the EACPT Congress in Edinburgh held in 2009, where SEFC successfully bid for the 2015 EACPT Congress. L → R: Meritxell Bernat (member), Germán Kreis (member), Gonzalo Calvo (Vice President), Esther Prieto (Secretary), and Antonio Portolés (President)

While it is impossible to predict events over the next 25 years, there is no doubt that during that time the SEFC will continue its dedicated service on behalf of patients, clinical pharmacology, and the medical scientific community in Spain and throughout the world. ●

On behalf of the Spanish Society of Clinical Pharmacology,

Esther Prieto  
Alfonso Moreno  
Joan Ramón Laporte

Nicolás Boada  
Africa Mediavilla  
Antonio Portolés

## Milestone Anniversaries



### **Safety Pharmacology in 2010: *The Safety Pharmacology Society* Celebrates Its Tenth Anniversary**

While a young discipline, the field of Safety Pharmacology has witnessed significant growth since the implementation of guidelines in this area by the International Congress of Harmonization (ICH; 1 - 3). The emergence of Safety Pharmacology and the Safety Pharmacology Society (SPS), which is a member of IUPHAR, was reviewed in an earlier publication of this newsletter (*Pharmacology International*, No 61, 2003). As the end of the first decade of the new millennium coincides with 10th anniversary of the incorporation of the SPS, it is appropriate to provide at this time a review of activities over this period. The world has changed considerably since the Society was first established and, in many ways, these changes have significantly influenced the Society's growth and activities.

The SPS was incorporated in 2000. A description of the Society and its mission is as follows:

“The Safety Pharmacology Society is a nonprofit organization that promotes knowledge, development, application, and training in Safety Pharmacology - a distinct scientific discipline that integrates the best practices of pharmacology, physiology and toxicology. The objective of Safety Pharmacology studies is to further the discovery, development and safe use of biologically active chemical entities by the identification, monitoring and characterization of potentially undesirable pharmacodynamic activities in nonclinical studies. The Safety Pharmacology Society also supports the human safety of drugs and biologicals by fostering scientific research, education, and dissemination of scientific information through meetings and other scientific interactions.”

Since its inception, the SPS has grown significantly in the number of members, breadth of its programming and services, and in its international reach. The Society holds annual meetings in alternate years in Europe and North America and efforts are underway to extend programming and services to other regions of the world. To learn more about these efforts, and about opportunities to assist the Society in its international outreach, please visit the SPS website ([www.SafetyPharmacology.org](http://www.SafetyPharmacology.org)).



## Safety Pharmacology in 2010: The Safety Pharmacology Society Celebrates Its Tenth Anniversary (continued)



The events that have influenced the growth of the Society have come from both outside and within the organization. In 2000, the ICH guideline governing Safety Pharmacology was adopted worldwide and a new initiative, ICH S7B, was begun to address non-clinical approaches and strategies to assess drug-induced delayed cardiac repolarization (e.g., QTc interval prolongation). As a result, these topics occupied a major part of the Society's agenda at annual meetings and led to a number of initiatives by the Society members in other forums to establish best practices, e.g. ILSI-HESI Proarrhythmia Initiative and QTPRODACT, in this area. These efforts resulted in an improved understanding of the issue and appropriate examination methodologies. However, at this same time, new concerns in other fields of safety pharmacology (e.g., neuropharmacology, respiratory pharmacology, and others) drew the attention of Safety Pharmacologists and the Society.

The impact of tragic events, such as the terrorist attacks that have occurred in the United States, Spain, the United Kingdom and elsewhere, has clearly had an influence on topics of interest to safety pharmacologists. Moreover, for political, economic and technical reasons, it is becoming more difficult to develop new medications, increasing the demand for new ideas to overcome these hurdles. These have included technologies such as combinatorial chemistry, high throughput screening, "shots on goal", and the development of biomarkers of efficacy and safety. As these strategies have not significantly reduced the time for drug development or its cost, new ideas are being advanced to address these issues. Traditionally, Safety Pharmacologists have been asked to identify pharmacodynamic toxicities associated with acute or subchronic administration of compounds. However, more recently, the field is being challenged to identify adverse pharmacodynamic events following a life-time of treatment.

Regulatory concerns for assuring human safety during advancement of new molecules through clinical development are another area that has changed considerably over the last 10 years. While all agree on the paramount importance of assuring human safety, there remains debate about the proper balance of risk and benefit, especially with respect to drugs that could be used to meet an unmet medical need.

### **SPS: Growth and Scientific Impact**

A growing interest in the Safety Pharmacology is evidenced by the increase in the number of new Society members from around the world and the growth in attendance at the annual meeting. In addition, the Society recognizes that different regions of the world are at different stages of adapting programs in Safety Pharmacology, making it important to customize approaches to safety issues based on local customs and needs. Those Society members who have been deliberating over the concepts and principles of safety pharmacology for around 20 or more years, and who have successfully implemented programs, are available to help new colleagues and members who are just establishing programs in emerging countries. You are invited to contact the Society with any

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## Safety Pharmacology in 2010: The Safety Pharmacology Society Celebrates Its Tenth Anniversary (continued)

questions concerning the availability of such expertise through the website address ([www.safetypharmacology.org](http://www.safetypharmacology.org)).

The growth of the Society over the last 10 years has also been reflected in the society programming. Whereas, in the early years, most of the attention was focused on new technologies, a critical area of growth that will continue as new products are brought to market, will be best practices in Safety Pharmacology, and the emerging data that will ultimately influence regulatory guidelines directly related to Safety Pharmacology. In this regard, members of the SPS have published articles dealing with the optimization of electrocardiographic recordings in non-rodent toxicology studies through the use of new technology like jacket telemetry (4). In addition, Safety Pharmacology Society members from across the industry collaborated and published recommendations on appropriate cardiovascular safety pharmacology testing for biologicals (5).



Other topics of emerging importance include:

- a) the translation of Safety Pharmacology outcomes to the prediction of clinical adverse events (3, 6);
- b) strategies for mitigating the risk of compound failure in development (7), and
- c) the use of stem cell technologies for cardiac safety evaluation (8).

These reports represent but a few examples of scientific activities and discussions within the safety pharmacology community, and demonstrate the potential impact of safety pharmacology studies on preclinical safety evaluation. It is recognized that despite best efforts in the past, it was not always possible to predict some pharmacodynamic toxicities in preclinical models (3). It is hoped these new approaches may improve the ability to identify hazards and improve the translation of laboratory animal work to the clinic.

### International Connections

The SPS also recognizes the importance of sister societies, including IUPHAR, and other organizations in their scientific programming, and the vital role that our international membership plays in the success of the Society. Recognition of these facts is evidenced by the inclusion in SPS annual meetings of important scientific topics outside of Safety Pharmacology. For example, this has facilitated attendance and plenary lectures by key opinion leaders and Nobel Laureates (*i.e.*, the late Sir James Black in 2008). In addition, programming jointly sponsored by the SPS and sister organizations at other society meetings has been a natural extension of the Society's strong interest in reaching out to the international scientific community.

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# Safety Pharmacology in 2010: The Safety Pharmacology Society Celebrates Its Tenth Anniversary (continued)

## SPS: "2020" Vision

While there will be many challenges over the next 10 years, the Society looks forward to continued growth in terms of its influence on science policy and laboratory practices. To this end the Society has developed a strategic plan that defines the goals for the immediate, intermediate and long-term future. In addition, the Society has begun to leverage the technologies available for dissemination of general and scientific information outside of the annual meeting. For example, the Society now offers regional scientific programs/workshops and webinars. Social networking technologies are also being pursued by the SPS to offer additional avenues for communication and scientific exchange among the growing number of Safety Pharmacologists. All of these activities are aimed at serving all regions of the world with an interest in this field.

Drug discovery and development is becoming a more challenging enterprise. While promising new therapeutic targets are being identified routinely, it is difficult to exploit these opportunities in the absence of fundamental about the affected biological systems. In addition, the costs associated with moving a new chemical entity to the marketplace, and the regulatory hurdles to registration, are becoming more onerous. Safety Pharmacologists are now being asked now to predict how small physiological changes, such as a 2-3 mmHg rise or fall in blood pressure, caused by a lifetime of treatment affects response outcomes. Accomplishment of these tasks is hindered by the declining number of appropriately trained Safety Pharmacologists. This is an issue of global concern, as reflected by renewed efforts to enhance instruction in integrative pharmacology (9). The educational outreach activities and educational programs of the SPS are designed to recruit and assist in the training of the next generation of scientists capable of fully assessing the impact of drugs and toxins on biological systems.

## Conclusions

In reflecting upon this tenth anniversary of the SPS, what is most obvious is the dynamic nature of the discipline and the critical role that safety pharmacologists now play in the selection and development of new therapeutics. During its first decade of existence, the Society has achieved recognition an international community of experts devoted to ensuring that drugs and toxins are appropriately used and monitored. Because of the growing challenges associated with drug development, the SPS will play an increasingly important role in identifying ways to reduce costs and risks associated with this enterprise while ensuring that pharmacotherapies are employed in a safe and efficacious manner. On behalf of the Board of Directors, we invite you to contact us with any questions or comments, and encourage you to consider attendance at our 10th annual meeting, which will be held in Boston, Massachusetts, USA September 20-23, 2010 (10). •

Hugo M. Vargas      and      Alan S. Bass  
Vice President Elect      Board Member





## Safety Pharmacology in 2010: The Safety Pharmacology Society Celebrates Its Tenth Anniversary (continued)

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# Integrative Organ System Pharmacology 'IOSP' Workshop 13-15 March, 2010 in Cairo, Egypt



The IOSP workshop instructors welcomed the trainees. L → R: Mohamed T. Khayyal, David B. Bylund, and Magda Zaki

The Egyptian Society of Pharmacology and Experimental Pharmacology (ESPET) organized, under the auspices of IUPHAR, a 3-day workshop on Integrative Organ System Pharmacology (IOSP), with a focus on the cardiovascular system. The workshop, which was held at Cairo University, was organized by Prof. A.M. Abdel-Tawab from Ain Shams University in collaboration with Prof. Magda Zaki, Head of the Pharmacology Department, Faculty of Medicine, Cairo University and Prof. Abdel-Fattah Marrei. Dr. David Bylund from University of Nebraska, USA, attended as a lecturer and formal representative of IUPHAR.

Because of the large number of applicants, the number of young scientists accepted as students for the course was increased from 12 to 17. This being the first time such an event was convened in Egypt, the eagerness shown by applicants from universities throughout Egypt reflected the dire need to quench the thirst of young scientists for knowledge in experimental organ system pharmacology. Eight universities and research institutes were represented at the workshop.



The discussions were lively and informative.



The students were able to practice their new skills.

The workshop format consisted of lectures and hands-on interactive laboratory sessions. Participants were introduced to the concepts of IOSP, animal models and ethical considerations in animal experimentation. Practical sessions on handling of animals and performing *in vitro* and *in vivo* experiments on cardiovascular parameters were organized so as to allow each participant an opportunity to perform experimental manipulations.

The participants received a certificate of attendance on behalf of IUPHAR and ESPET. Student evaluations indicated they feel this experience will be of great benefit to their professional careers. As a group the students requested that such workshops be held on a regular basis in Egypt to cover other areas of experimental pharmacology. This important aspect of training in practical pharmacology will be of prime concern to ESPET in the years ahead. ●

Mohamed T. Khayyal  
President, ESPET  
Councilor, IUPHAR



Ahmed Abdel-Tawab explained the ethics in animal experimentation.





## EARLY CAREER INVESTIGATOR AWARD WINNERS

[www.seiservices.com/nida/frontiers2010](http://www.seiservices.com/nida/frontiers2010)

# FRONTIERS

IN ADDICTION RESEARCH

NIDA NATIONAL INSTITUTE  
ON DRUG ABUSE

2010 NIDA Mini-Convention  
Friday, November 12, 2010  
Venue TBD, San Diego, CA

The U.S. National Institute of Drug Abuse (NIDA) will hold a mini-convention entitled "Frontiers in Addiction Research" as a satellite of the Society for Neuroscience Annual Meeting in San Diego, USA on Friday, November 12, 2010 from 8:00 a.m. to 6:25 p.m.

At the NIDA mini-convention satellite meeting, outstanding scientists will present recent findings and discuss future directions in the neurobiology of drug abuse and addiction. The mini-convention will include four symposia, a presentation by the Jacob Waletzky Memorial Prize winner, and the poster session for early career investigators. The symposia this year are:

- Using model organisms to discover unanticipated pathways to addiction
- A fresh look at dopamine release and uptake
- Role of nicotinic receptors in the medial habenula in mediating addiction to nicotine and other drugs
- Connectivity of the human brain and its disruption by drugs of abuse

NIDA and IUPHAR are jointly sponsoring young investigator awards in the amount of US\$1,000 to help cover the costs of travel and expenses associated with participation in this event. The 2010 awardees are (in alphabetical order):



Carlo Cifani received his Ph.D. at the University of Camerino under Prof. Maurizio Massi and was nominated by the Italian Society of Pharmacology. He's currently conducting post-doctoral research at the NIH/NIDA Behavioral Neuroscience Branch in Baltimore, USA. His NIDA meeting abstract is entitled "Role of dorsal medial prefrontal cortex dopamine in stress-induced reinstatement of palatable food seeking".



Daniel Rial obtained his Ph.D. from the Federal University of Santa Catarina under Prof. Rui Daniel S. Prediger, and is now engaged in post-doctoral studies there. Dr. Rial was nominated by the Brazilian Society of Pharmacology and Experimental Therapeutics. His NIDA meeting abstract is entitled, "Plasticity of the dopaminergic mesocorticolimbic pathway underlies the increased resistance to ethanol addictive properties in cellular prion protein (PrPC) null-mice".



Ramón Sotomayor-Zárate obtained his Ph.D. from the University of Chile and was nominated by the Chilean Society of Pharmacology. He is pursuing post-doctoral training at the Pontifical Catholic University of Chile. Dr. Sotomayor-Zárate's NIDA meeting abstract is entitled "Repeated cocaine administration prevents stressin I-induced dopamine and glutamate release in the rat lateral septum area."

IUPHAR is proud to join with NIDA in sponsoring this worthwhile program. ●

S. J. Enna  
IUPHAR Secretary-General

# NC-IUPHAR 2010: from Beijing to Copenhagen

The mission for NC-IUPHAR is to support scientists by providing pragmatic and clear nomenclature guidelines on key receptor, ion channel and drug binding sites. This also entails the establishment of standards for pharmacology. The guidelines are published in primary journals and in the free-access database ([www.iuphar-db.org](http://www.iuphar-db.org)). NC-IUPHAR is an expert-based system which complements the main genomic approaches (*e.g.*, ENSEMBL, *etc.*). These guidelines apply to any interaction of a chemical with its binding sites in living cells as well as to toxicological and environmental issues.

The NC-IUPHAR has more than 60 subcommittees comprising approximately 700 pharmacologists who freely donate their time in helping to define receptor nomenclatures in their areas of expertise.

NC-IUPHAR collaborates formally with:

- Genome: the Human Genome Nomenclature Committee (HGNC) to facilitate the joint classification of genes and receptor
- Chemistry: the IUPAC nomenclature committee (ICNTS), international repertories of chemical structures (PubChem) and MedChem (ChEMBL)
- Enzymes: IUBMB
- ASPET and *Pharmacological Reviews* for publication of nomenclature articles
- BPS and GRAC, its nomenclature group
- Other pharmacological societies but particularly the French and Australian societies
- CODATA
- PharmGKB

A definitive human gene-receptor list is under preparation in collaboration with HGNC. However, the multitude of factors between a published genomic sequence and an assigned receptor function or drug interaction in specific tissues (Table 1) means that the ways of addressing the complexity of receptors in different tissues (epigenetic changes, alternative splicing, messenger RNA editing, polymorphisms, the combinatorial nature of subunit association) will not be so easy to categorize. Nevertheless, a flexible organisation with good quality control can adapt to this challenge. This also requires creating clear guidelines in complex areas, for which working groups of experts have been established so that the field has common standards, as was done for G protein heterodimers (Pin et al., 2007). Following this model, issues surrounding allosterism and alternative splicing are being addressed.

**Table 1.** Some of the variables in drug/receptor interactions which would lead to different functional outputs

Agonism, partial agonism, antagonism, inverse agonism  
Onset and offset kinetics  
Concentration of agonist  
Site of action within the receptor (orthosteric, allosteric)  
G protein coupling  
Phosphorylation, acetylation *etc.*  
Transactivation (*e.g.*, GPCRs modulated by tyrosine kinases)  
Presynaptic/postsynaptic control  
Receptor heterodimers  
Receptor accessory proteins (*e.g.*, coupling to PDZ domains) and associated coupling complexes  
Chronobiological modulation of accessory proteins, receptor expression, *etc.*  
Functional selectivity – ligand-induced differential signalling  
Biologically important receptor polymorphisms (SNPs, pseudogenes, alternative splicing, mRNA editing)

## Organisation.

**Members of the core committee.** The current membership of NC-IUPHAR is shown on Table 2. Each member is a liaison officer with a group of activities. Over the past four years NC-IUPHAR has met every six months in Paris, with the exception of one meeting in Washington DC (Society for Neuroscience meeting).



## NC-IUPHAR 2010: from Beijing to Copenhagen (continued)

**Corresponding Members.** To broaden the scope of the core committee without increasing expenses, the number of corresponding members has been increased to include experts in selected areas who may be invited to particular meetings for their input. In addition, representatives of the major pharmaceutical companies are included in this group (Table 2).

**Editorial.** Eliot Ohlstein has energetically expanded the number of published by NC-IUPHAR committees in *Pharmacological Reviews*.

**Evolving Pharmacology.** Anthony Davenport leads a group which validates the “de-orphanisation” of GPCRs. Particularly important and timely breakthroughs are included in the Hot Topics section of the database with e-mail alerts.

**Translational pharmacology.** A subgroup of clinical pharmacologists has agreed to be corresponding members who provide advice on translational aspects of receptor pharmacology. This group has not yet met, the initiative being dependent on further funding, but provides a very valuable authoritative resource for NC-IUPHAR.

**Subcommittee chairs** propose a list of experts, which is then reviewed and ratified by NC-IUPHAR, to ensure adequate representation of the field. The chairman of each subcommittee plays a critical role coordinating the actions of that group, organising meetings and finalising documents and the website pages. Postdoctoral fellows are recruited as members of the subcommittee as more senior members of the group often don't have the time to complete the receptor templates for publication. This gives the fellows an opportunity to receive publication credit for their work. Several NC-IUPHAR publications have gone on to become citation classics. The subcommittee meets to establish consensus on classification, and to ensure compliance with NC-IUPHAR guidelines. The NC-IUPHAR benefits from a privileged relationship with ASPET, with its core publications appearing in *Pharmacological Reviews*.

**Table 2.** Membership of NC-IUPHAR (as of 2009)

**Chairman**

Michael Spedding, France

**Vice-Chairmen**

Anthony Harmar, UK - Database Chairman

Eliot Ohlstein, USA - Editor

Anthony Davenport, UK - Chairman of Evolving Pharmacology

Rick Neubig, USA - GPCRs

**Members**

Tom Bonner, USA

William Catterall, USA

Philippe Delagrang, France

Sir Colin T. Dollery, UK

Steven M. Foord, UK

Pierre Germain, USA

Vincent Laudet, France

Graeme Milligan, UK

John Peters, UK

Jean-Philippe Pin, France

David Searls, USA

# NC-IUPHAR 2010: from Beijing to Copenhagen

(continued)

## **Corresponding Members**

Stephen Alexander, UK  
Michel Bouvier, Canada  
Ed Bullmore, UK (Clinical)  
Stephen Charlton, UK  
Moses Chao, USA  
Arthur Christopoulos, Australia  
Steven L. Colletti, USA  
Graham Collingridge, UK  
Robert Dow, UK (Clinical)  
Patrick du Souich, Canada (Clinical)  
Franz Hofmann, Germany  
Ad P. IJzerman, The Netherlands  
Michael F. Jarvis, USA  
Terry Kenakin, USA  
Chris Langmead, UK  
Alistair Mathie, UK  
Stefan Offermanns, Germany  
Richard Olsen, USA  
Graeme Semple, USA  
Michael A. Trevethick, UK  
David Webb, UK (Clinical)  
Alan Wise, UK

## **Ex Officio**

Sue Duckles, USA - IUPHAR President  
S.J. Enna, USA - IUPHAR Secretary-General  
Urs Rugg, Switzerland - IUPHAR Treasurer  
Joanna Sharman, UK - Database Developer  
Chido Mpamhanga, UK - Database Curator  
Matt Wright, UK - representing HGNC

## **Past Chairmen**

Paul Vanhoutte, China  
Robert Ruffolo, USA

## **The IUPHAR receptor database.**

NC-IUPHAR operates and oversees the IUPHAR Receptor Database ([www.iuphar-db.org](http://www.iuphar-db.org)) under the direction of Prof. Tony Harmar. This publicly-accessible relational database contains all of the essential receptor data for GPCRs and voltage-gated ion channels, with ligand-gated ion channel and nuclear receptor data under development (see Harmar et al., 2009). The IUPHAR Receptor Database was developed initially by the support of an educational grant from Incyte Genomics, and subsequently from ICSU and now the British Pharmacological Society (BPS), in a joint initiative with GRAC. The database group, which is composed of two full-time curators, is housed at the University of Edinburgh.

Major progress has been made in recent years on the database content and user interface. Particular effort has been focused on increasing the information in the database and on the searchability of the ligands involved in receptor characterisation. Ligand pages provide 2D structures, calculated physicochemical properties, ligand-receptor selectivity profiles and links to other important resources. Ligand pages are dynamically linked to receptor pages containing pertinent information on structure, function, expression, genomics, pharmacology and pathology.

The website is routinely accessed by scientists from more than 150 countries. A recent example is the application of the IUPHAR-DB dataset for developing data mining tools (Garcia-Serna et al, 2010).



# NC-IUPHAR 2010: from Beijing to Copenhagen (continued)

An UNESCO review of NC-IUPHAR activities stated that the website for receptor classification, and the organisation behind it was:

*“An ambitious, important initiative to create a platform for research, and science education, science policy, dissemination, and creation of new knowledge with real implications for improvement of human well-being, wealth creation, and exploration of natural and traditional medicines from the developing world - visionary, extremely well planned; many of the necessary activities and structures are already in place.”*

## Recent Progress.

The NC-IUPHAR *Pharmacological Reviews* articles that have appeared since the Beijing meeting are listed in the references. In addition to these reports, as detailed below, some major initiatives have been completed over the last three years.

### 1. Ligand-Gated ion Channels

The classification/nomenclature for ligand-gated ion channels (LGICs) has been completed. The classification was published and portions discussed during a very well attended introductory conference on the topic co-hosted with *Neuropharmacology* (Collingridge et al., 2009). This achievement was the culmination of a significant effort by Graham Collingridge, John Peters and Richard Olsen, who revised the classified the GABA receptors (Olsen and Sieghardt, 2008, 2009). The revised nomenclature for glutamate ionotropic receptor subunits is displayed on Table 3. All of the ligand-gated ion channel subcommittees are currently in the process of providing relevant information for the database.

**Table 3.** New IUPHAR nomenclature for glutamate ionotropic receptor subunits

New IUPHAR nomenclature for glutamate ionotropic receptor subunits								
NMDA			AMPA			Kainate		
Old	HUGO	IUPHAR	Old	HUGO	IUPHAR	Old	HUGO	IUPHAR
NR1	GRIN1	GluN1	GluR1	GRIA1	GluA1	GluR5	GRIK1	GluK1
NR2A	GRIN2A	GluN2A	GluR2	GRIA2	GluA2	GluR6	GRIK2	GluK2
NR2B	GRIN2B	GluN2B	GluR3	GRIA3	GluA3	GluR7	GRIK3	GluK3
NR2C	GRIN2C	GluN2C	GluR4	GRIA4	GluA4	KA-1	GRIK4	GluK4
NR2D	GRIN2D	GluN2D				KA-2	GRIK5	GluK5
NR3A	GRIN3A	GluN3A						
NR3B	GRIN3B	GluN3B						

### 2. Voltage-gated ion channels

The classification of the voltage-gated ion channels is complete thanks to the efforts of William Catterall and his subcommittees. A full issue of *Pharmacological Reviews* was devoted to this topic. The database is essentially complete.

### 3. Nuclear receptors

The classification of nuclear receptors is complete thanks to Vincent Laudet and his subcommittees. An entire issue of *Pharmacological Reviews* was devoted to this subject. The database is under construction. *Continued on page 53...*

# NC-IUPHAR 2010: from Beijing to Copenhagen

(continued)

## 4. G-Protein-coupled receptors (GPCRs)

The tremendous effort by Tony Harmar's group has rendered this database a living and authoritative resource. The Hot Topics and Emerging Pharmacology (Anthony Davenport) sections represent cutting edge pharmacology. The curators are essential to this activity. Rick Neubig has taken on a special role in coordinating GPCR issues.

## 5. Resolutions of controversy in the literature

In addition to harmonizing the ligand-gated ion channel nomenclature there are several other examples of how NC-IUPHAR assisted in the clarification and harmonization of controversy in the literature. For example:

### Niacin receptor

Because of the increased de-orphanisation of receptors, and an increased understanding of their pharmacology and biology, the niacin receptor class has been renamed to the hydroxy-carboxylic acid receptors (HCA), with individual receptor subtypes characterized as HCA1, HCA2, HCA3. In addition to niacin, physiological ligands for these receptors are the ketone body 3-hydroxy-butyrate, the metabolite 2-hydroxy-propanoate (lactate) and the beta-oxidation intermediate 3-hydroxy-octanoate. Thus, this receptor subfamily is activated by hydroxy-carboxylic acid intermediates of energy metabolism.

### FPR2 and leukotriene receptors

Thanks to the efforts of NC-IUPHAR an issue relating to the formyl peptide (FPR) and lipoxin receptors has been resolved. In this case, two different areas of biology share the same receptor but have different ligands. The *N*-formylated peptides, lipoxin, LXA4, and ATL are all endogenous peptide ligands despite the differences in their primary structures and their different origins. Those in the FPR field referred to the receptor as FPR2, whereas leukotriene scientists referred to it as ALX. The new nomenclature of FPR2/ALX has been accepted by the representative NC-IUPHAR receptor subcommittees and will be promulgated in the literature.

### Orexin/hypocretin receptors

This receptor class has been harmonized. The orexin ligand is now characterized as interacting with OX1 and OX2 receptors. Future use of the term hypocretin should be avoided.

## Symposia.

1. NC-IUPHAR and *Neuropharmacology* organised a successful meeting on ligand-gated ion channels in Washington DC prior to the 2008 Society for Neurosciences meeting. This meeting was a vehicle for introducing the new nomenclature, reinvigorating subcommittees, and for producing a complete volume of *Neuropharmacology* dedicated to this theme.
2. NC-IUPHAR and *Neuropharmacology* are now organizing a Society for Neuroscience satellite to be held in San Diego in November 2010. This symposium, entitled "**High resolution neuropharmacology: Structure changes the paradigm**" brings together experts on structural pharmacology to discuss how structural biology may influence some of the basic tenets of pharmacology and drug discovery.
3. There will be a symposium at WorldPharma2010 on evolving pharmacology organised by Anthony Davenport.
4. Rick Neubig is organising a GPCR symposium for the 2011 Experimental Biology meeting in Washington, DC.
5. Some of the satellite symposia at WorldPharma2010 are organized by subcommittees or members of these groups (*i.e.*, endocannabinoids).



## NC-IUPHAR 2010: from Beijing to Copenhagen (continued)

### **Funding.**

NC-IUPHAR operations are entirely dependent on the receipt of grants and donations from the pharmaceutical industry and professional societies. During the past four years this effort has been underwritten by funds received for this purpose from GSK, Servier, Novartis, Wyeth, the British Pharmacological Society, the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists, and from ICSU. While fund raising has become more difficult because of changes in the pharmaceutical industry, efforts will continue to seek such donations as well as to obtain grant support from appropriate agencies. Because of our limited resources it is impossible for NC-IUPHAR on its own to support meetings or large standing committees.

### **Future.**

The multiple variables in drug-receptor interactions (Table 1) are under evaluation by NC-IUPHAR working groups. These efforts will lead to a number of authoritative reports in the near future that will be of crucial importance for pharmacology.

NC-IUPHAR and HGNC are preparing databases of all the human genes encoding receptors and other drug targets. Furthermore, plans are being made to assess the entire “druggable genome” in an effort to provide support for innovative drug discovery initiatives.

Other ongoing projects include characterisation of receptors linked to tyrosine kinase, immunological receptors, and transporters. Even though NC-IUPHAR is a very flexible organisation, completion of these ambitious projects will require acquisition of funds specifically for these purposes.

### **Acknowledgements.**

We are very grateful to our corporate and society sponsors. We are also immensely indebted to NC-IUPHAR colleagues, subcommittee members, and chairs for their continuing efforts in helping bring order out of chaos. It is a privilege to be associated with so much work done solely for the good of science.

Note that inasmuch as NC-IUPHAR accepts work from any interested scientists, anyone wishing to contribute to this effort should contact us about their interest. ●

### **Michael Spedding, NC-IUPHAR Chairman**

Experimental Sciences  
Institute of Research Servier  
11 Rue des Moulineaux  
92150 Suresnes, France  
[michael.spedding@fr.netgrs.com](mailto:michael.spedding@fr.netgrs.com)

### **Eliot H. Ohlstein, NC-IUPHAR Editor**

AltheRx, LLC  
Philadelphia, PA, USA  
[eohlstein@gmail.com](mailto:eohlstein@gmail.com)

### **Anthony Harmar, Database Committee Chairman**

Queen's Medical Research Institute  
University of Edinburgh  
47 Little France Crescent  
Edinburgh, EH16 4TJ, UK  
[curators@iuphar-db.org](mailto:curators@iuphar-db.org)

# NC-IUPHAR 2010: from Beijing to Copenhagen (continued)

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# Upcoming Events

## July

### 2010 Annual Meeting

*Serotonin Club* (Montréal, Québec, Canada)

July 9 - 11, 2010 <http://www.serotoninclub.org>

### WorldPharma2010 Satellite Meeting

**Empowering effective teaching in pharmacology for a safer tomorrow**

*IUPHAR Teaching Section* (Copenhagen, Denmark)

July 17 - 18, 2010 <http://www.IUPHAR-teach2010.org>

### WorldPharma2010

#### 16th World Congress on Basic and Clinical Pharmacology

Organized by the

*Danish Society for Pharmacology*

in conjunction with the

*British Pharmacological Society*

under the auspices of the

*International Union of Basic and Clinical Pharmacology*

July 17 - 23, 2010 in Copenhagen, Denmark

See pages 8 - 21 for descriptions of the IUPHAR sponsored programs.

Visit <http://www.WorldPharma2010.org> for the full listing of scientific programs.

### WorldPharma2010 Satellite Meetings (continued)

#### 12th International Symposium on Vascular Neuroeffector Mechanisms

July 24 - 26, 2010 (Odense, Denmark) <http://www.vnm2010.org>

#### Special Session on Potential Candidates for Cannabinoid Receptors

(Day 1 - 20th Annual Symposium of the International Cannabinoid Research Society)

*NC-IUPHAR Subcommittee on Cannabinoid Receptors*

July 24 - 27, 2010 (Lund, Sweden) <http://www.ICRS2010.org>

#### 12th International Congress of Toxicology

*International Union of Toxicology* (Barcelona, Spain)

July 19 - 23, 2010 <http://gestion.pacifico-meetings.com/www/iutox2010>

#### 2nd World Conference on Research Integrity

Sponsored in part by the *International Council for Science* (Singapore)

July 21 - 24, 2010 <https://www.wcri2010.org>

To include your events here, please e-mail the details to [iuphar@kumc.edu](mailto:iuphar@kumc.edu).

# Upcoming Events

## *August/September/October*

### **23rd ECNP Congress**

*European College of Neuropsychopharmacology* (Amsterdam, The Netherlands)

August 28 - September 1, 2010 [www.ecnp.eu](http://www.ecnp.eu)

### **39th Annual Meeting**

*American College of Clinical Pharmacology* (Baltimore, Maryland, USA)

September 12 - 14, 2010 <http://www.accp1.org>

### **XXXII Congress**

*Spanish Society of Pharmacology* (León, Spain)

September 15 - 17, 2010 <http://www.congresofarmacologialeon.com>

### **6th Croatian Congress of Pharmacology with International Participation**

*Croatian Pharmacological Society* (Opatija, Croatia)

September 15 - 18, 2010 <http://pharma.mef.hr>

### **XVIIth International Congress**

*Polish Pharmacological Society* (Krynica Zdroj, Poland)

September 16 - 18, 2010 <http://www.ekonferencje.pl/17mkf>

### **10th Annual Meeting**

*Safety Pharmacology Society* (Boston, Massachusetts, USA)

September 20 - 23, 2010 <http://www.safetypharmacology.org/am2010/index.asp>

### **8th EACPT Summer School - Individualized Medicine in the Postgenomic Era**

*European Association for Clinical Pharmacology and Therapeutics* (Dresden, Germany)

September 30 - October 2, 2010 <http://www.EACPT-Dresden.de>

## *November/December*

### **10th Annual Meeting**

*International Society of Pharmacovigilance* (Accra, Ghana)

November 3 - 6, 2010 <http://www.isop2010.org>

### **20th Neuropharmacology Conference: Receptor Structure and Drug Design**

*Nomenclature Committee of IUPHAR (NC-IUPHAR) and Elsevier* (San Diego, California, USA)

November 11 - 12, 2010 (Satellite Meeting to Neuroscience 2010)

<http://www.neuropharmacology-conference.elsevier.com>

### **Paul M. Vanhoutte Research Symposium and 4th Annual Scientific Meeting**

*Asian Society for Vascular Biology* (Hong Kong, PR China)

November 20 - 21, 2010 <http://asvb2010.hku.hk>

### **2010 Annual Meeting**

*Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists* (Melbourne, Australia)

November 28 - December 1, 2010 <http://www.ascept.org/Events/ASCEPTAnnualScientificMeeting2010.aspx>

### **Pharmacology Havana 2010 and 4th International Congress of Pharmacology and Therapeutics**

*Cuban Society of Pharmacology* (Havana, Cuba)

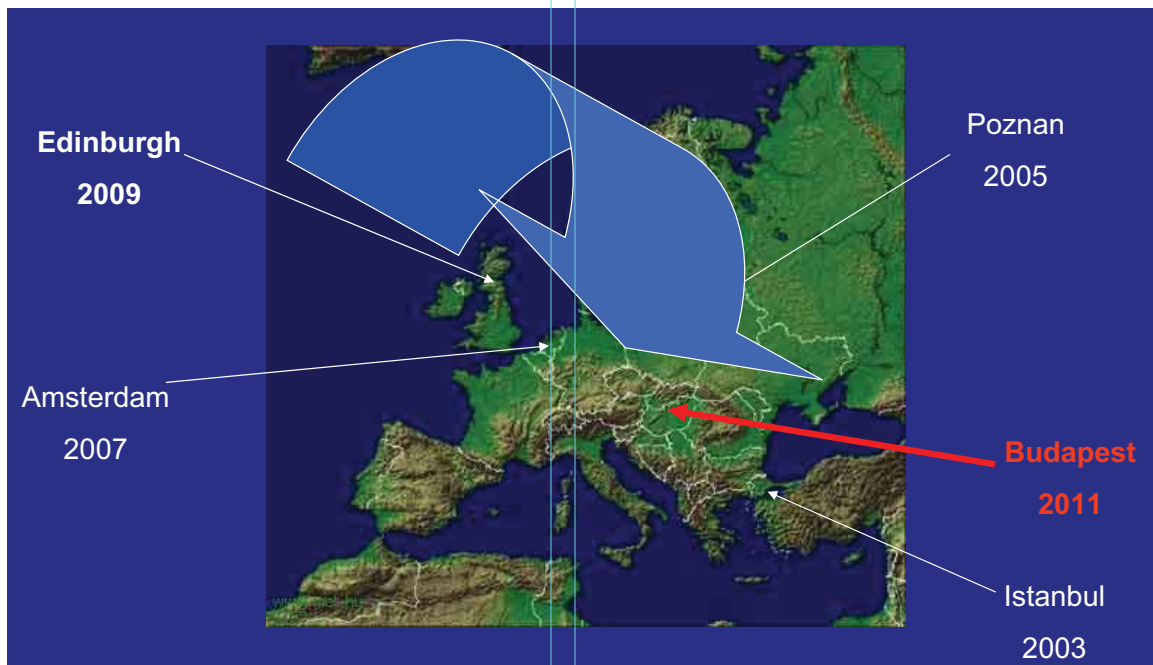
December 13 - 16, 2010 <http://www.pharmacologyhavana.com>

# MEETING INVITATION

**From the Scottish *kilt*  
to the Hungarian *gatya*...**



**...the pendulum swings back again!**



**[www.EACPT2011.org](http://www.EACPT2011.org)**



Magyar Kísérletes és Klinikai  
Farmakológiai Társaság  
Hungarian Society for Experimental and  
Clinical Pharmacology

10<sup>th</sup> Congress of the European  
Association for Clinical  
Pharmacology and Therapeutics,  
Budapest, Hungary  
26-29 June 2011





# MEETING INVITATION



European College of Neuropsychopharmacology

**ecnp**

## Call for Breaking News

There will be two Breaking News symposia organised at the 23<sup>rd</sup> ECNP Congress.

- Do you have breakthrough data?
- Are your new results of particular clinical interest?
- Do you want to present your new findings to your colleagues at the 23<sup>rd</sup> ECNP Congress?

The Scientific Programme Committee invites you to propose a lecture\* for one of the two Breaking News symposia that will be held during the 23<sup>rd</sup> ECNP Congress.

Submission is possible from **1 June - 15 July 2010** via the ECNP website **[www.ecnp.eu](http://www.ecnp.eu)** where you will also find further details on how to apply.

A vibrant, multi-colored microscopic image of neurons. The cell bodies are in shades of red, orange, and yellow, with long, thin dendrites and axons extending outwards in green and blue. The background is a dark, textured blue.

**23<sup>rd</sup> ECNP Congress**  
**28 August - 1 September 2010**  
**Amsterdam, The Netherlands**

\* Selected speakers for the Breaking News symposia will be treated as invited speaker, i.e. free registration, hotel accommodation of maximal 4 nights in a single room with breakfast during the congress period, and travel costs will be reimbursed at a maximum of an airfare round trip tourist class ticket (APEX airfare conditions) from your city of origin to Amsterdam, provided these costs cannot be claimed elsewhere. Additional travel costs (such as taxi costs to/from the airport) will not be reimbursed



# MEETING INVITATION

## High Resolution Neuropharmacology

Structure changes the Paradigm  
20th Neuropharmacology Conference

November 10-12, 2010 | San Diego, USA  
Satellite to the 2010 Meeting of the Society for Neuroscience



## Program and Registration Brochure

**Register online before 30 September 2010 for early bird rates**

### Speakers:

Ruben Abagyan, *USA*  
Francine Acher, *France*  
Susan Amara, *USA*  
Laura Bohn, *USA*  
Olga Boudker, *USA*  
Jean-Pierre Changeux, *France*  
Arthur Christopoulos, *Australia*  
Jeffrey Conn, *USA*  
Pierre-Jean Corringer, *France*  
Oliver Ernst, *Germany*  
Ulrik Gether, *Denmark*  
Rod Hubbard, *UK*  
Ehud Isacoff, *USA*  
Jette Kastrup, *Denmark*

Vincent Laudet, *France*  
Fiona Marshall, *UK*  
Mark Mayer, *USA*  
Pierre Paoletti, *France*  
Roger Papke, *USA*  
Maurizio Pellecchia, *USA*  
Jean-Philippe Pin, *France*  
Darryle Schoepp, *USA*  
Guy Servant, *USA*  
Michael Spedding, *France*  
Ray Stevens, *USA*  
Sidney Topiol, *USA*  
Stephen White, *USA*

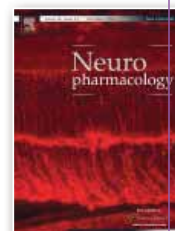
### List of topics:

- Variables in drug-receptor interactions
- Prospects for structure based methods in drug discovery
- Ligand-gated ion channels
- Class A GPCRs
- Class C GPCRs
- Transporters

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Pharmacology  
International

June 2010



## Attendance at this meeting will enable you to:

- Access unique, high-quality content and gain a state-of-the-art report on the latest developments in our understanding from using high resolution crystal structures of receptors and ion channels.
- Learn from experts in the field and meet with international researchers sharing a common interest.
- Present your latest research.
- Network with an interdisciplinary group – including academics, researchers, and health and industry professionals

## PROGRAM

### Wednesday November 10

- 11:00 **Registration**
- 12:50 **Opening Remarks**  
Michael Spedding, *Servier Research Institute, France*
- Variables in drug-receptor interactions**  
SESSION CHAIR: Michael Spedding, *Servier Research Institute, France*, Jean-Philippe Pin, *Université Montpellier, France*
- 13:00 **O1: GPCR allostery: A pharmacological perspective**  
Arthur Christopoulos, *Monash University, Australia*
- 13:30 **O2: How enzymes and receptor proteins work – allostery revealed**  
Jean-Pierre Changeux, *Pasteur Institute, France*
- 14:00 **O3: An evolutionary perspective to allostery in nuclear receptors and related proteins**  
Vincent Laudet, *ENS Lyon, France*
- 14:30 **O4: Structural dynamics of mGlu receptors: Options for various types of drugs**  
Jean-Philippe Pin, *Université Montpellier, France*
- 15:00 **Refreshment Break**
- Perspectives on structural biology and drug discovery – Session 1**  
SESSION CHAIR: Rod Hubbard, *University of York and Vernalis Ltd, UK* & Michael Spedding, *Servier Research Institute, France*
- 15:30 **O5: Protein structure and ligand interactions - what are the limits of current technologies and understanding?**  
Rod Hubbard, *University of York and Vernalis Ltd, UK*
- 15:45 **O6: Membrane protein structures – challenges and achievements**  
Steven White, *UC Irvine, USA*
- 16:15 **O7: From crystal structures to predictive binding models, applications to GPCRs, kinases, and NRs**  
Ruben Abagyan, *UCSD, USA*
- Perspectives on structural biology and drug discovery – Session 2**  
SESSION CHAIR: Rod Hubbard, *University of York and Vernalis Ltd, UK* and Michael Spedding, *Servier Research Institute, France*
- 16:45 **O8: The impact of recent X-Ray structure**

### determinations on structure-based drug design

Sid Topiol, *Lundbeck, USA*

- 17:15 **O9: NMR technologies**  
Maurizio Pellecchia, *Burnham Institute, USA*
- 17:45 **O10: Methods, applications and perspectives of fragment-based discovery**  
Rod Hubbard, *University of York and Vernalis Ltd, UK*
- 18:30 **Poster Session I & Drinks Reception**
- 20:30 **Close**

### Thursday November 11

#### Ligand gated ion channels (pt 1)

SESSION CHAIR: Jean-Pierre Changeux, *Pasteur Institute, France*

- 09:00 **O11: Allosteric mechanisms and allosteric effectors modulating bacterial pentameric Channel-Receptors**  
Pierre-Jean Corringer, *Pasteur Institute, France*
- 09:30 **O12: Insights into iGluR pharmacology from high resolution ligand binding domain crystal structures**  
Mark Mayer, *NICHD, USA*
- 10:00 **O13: Evaluating alpha7 nicotinic receptor function with allosteric modulators and tethered agonists**  
Roger Papke, *University of Florida, USA*
- 10:30 **Short Oral presentation**
- 10:45 **Short Oral presentation**
- 11:00 **Refreshment Break**

#### Class A GPCRs

SESSION CHAIRS: Ray Stevens, *The Scripps Research Institute, USA* and Janos Kiss, *Servier Research Institute of Medicinal Chemistry, Hungary*

- 11:30 **Structure and function of the human G-protein coupled receptor family**  
Ray Stevens, *The Scripps Research Institute, USA*
- 12:00 **O15: Structure and dynamics of rhodopsin, the light-activated G protein coupled receptor**  
Oliver Ernst, *Charite University, Germany*
- 12:30 **O16: Using thermostabilised receptors (StaRs) for structure based drug discovery**  
Fiona Marshall, *Heptares Therapeutics, UK*
- 13:00 **Lunch**

REGISTER NOW at: [www.neuropharmacology-conference.elsevier.com](http://www.neuropharmacology-conference.elsevier.com)

# MEETING INVITATION

## Exhibitions and sponsorship opportunities

An exhibition will run alongside the conference sessions. Space is available on a first-come first-served basis. In addition a range of commercial sponsorship opportunities are available

For all enquiries regarding exhibitions please contact:

Kevin Partridge, Commercial Director

Tel: +44 1865 843717

Email: k.partridge@elsevier.com

## Short Oral Presentation

14:30 **Short Oral Presentation**

14:45 **Short Oral Presentation**

### Transporters

SESSION CHAIR: Janos Kiss, *Servier Research Institute of Medicinal Chemistry, Hungary*

15:00 **O17: Mechanism of action of cocaine at the structural level on transporters**

Ulrick Gether, *University of Copenhagen, Denmark*

15:30 **O18: Glutamate Transporters (Title TBC)**

Susan Amara, *University of Pittsburgh, USA*

16:00 **O19: Toward the molecular mechanism of glutamate transporters**

Olga Boudker, *Weill Cornell Medical College, USA*

16:30 **Refreshment Break**

### Short Oral Presentation

17:00 **Short Oral Presentation**

17:15 **Short Oral Presentation**

### Terminology

17:30 **Roundtable of Terminology**

SESSION CHAIRS: Michael Spedding, *Servier Research Institute, France* and Arthur Christopoulous, *Monash University, Australia*

**What is a fragment, binding efficiency etc, as these have never been discussed in pharmacology circles: recommendations**

18:00 **Poster Session II & Reception**

20:00 **Close**

## Friday November 12

### Ligand gated ion channels (pt 2)

SESSION CHAIR: Mark Mayer, *NICHHD, USA*

09:00 **O20: Comparison of various ligand interaction with iGluRs, based on Crystallography**

Jette S. Kastrup, *University of Copenhagen, Denmark*

09:30 **O21: Allosteric control and modulation of NMDA receptor channels**

Pierre Paoletti, *ENS, France*

10:00 **Roundtable of Case Studies – Ligand-gated ion channels**

**Drug discovery: Just how different can allosteric ligands be in practice?**

10:30 **Short Oral presentation**

10:45 **Short Oral presentation**

11:00 **Refreshment Break**

## Receptors as molecular machines for biotechnology development

SESSION CHAIR Jean-Philippe Pin, *Université Montpellier, France*

11:30 **O22: Optical analysis of receptor activation mechanisms**

Martin Lohse, *University of Würzburg, Germany*

12:00 **O23: Developing light activated receptors as tools to understand physiological processes**

Ehud Isacoff, *UC Berkeley, USA*

12:30 **O24: Transcriptional functional selectivity**

Laura Bohn, *The Scripps Research Institute, USA*

13:00 **Lunch**

### Class C GPCRs

SESSION CHAIR: Graham Collingridge, *University of Bristol, UK* and Darryle Schoepp, *Merck, USA*

14:30 **O25: Pharmacology and functions of allosteric modulators of metabotropic glutamate receptors**

Jeff Conn, *Vanderbilt University, USA*

15:00 **O26: New ways to develop allosteric modulators in Class C GPCRs**

Guy Servant, *Senomyx, USA*

15:30 **O27: Selective agonist development based on 3D models and in silico screening**

Francine Acher, *Univ Paris Descartes, France*

16:00 **O28: Metabotropic glutamate receptors**

Darryle Schoepp, *Merck, USA*

16:30 **Refreshment break**

17:00 **Roundtable of case studies – GPCRs –**

SESSION CHAIRS: Michael Spedding, *Servier Research Institute, France* and Darryle Schoepp, *Merck, USA*

**Drug discovery: How can ligands give different functional outputs from the same receptor? Just how different can orthosteric and allosteric ligands be in practice?**

**Oral presentations from submitted abstracts**

17:30 **Panel Discussion – Future Opportunities**

18:15 **Closing Remarks: The Future**



## LOCATION

The conference will take place at the Westin San Diego. Located in the heart of beautiful downtown San Diego. Accommodation has been reserved for delegates at the Westin San Diego at the special rate US\$179.00 per room/night for single room and US\$199.00 for a double room excluding taxes.

Delegates should book before **October 11, 2010** to take advantage of this special rate. After this date, rooms are available subject to availability only.

To book by telephone, delegates should contact Group Central Reservations on +1 888 627 9033 and quote "Neuropharmacology Conference".

The Westin San Diego is one of the official hotels for the Society for Neuroscience Annual Meeting. Delegates attending the SFN meeting should reserve accommodation for that meeting through the Society for Neuroscience housing bureau: [www.sfn.org/am2010](http://www.sfn.org/am2010).

Any guests who require extra nights outside the conference should contact the hotel, please note any extra charges are to be settled on your departure.

**Book your accommodation online at:**

[www.neuropharmacology-conference.elsevier.com/accommodation.asp](http://www.neuropharmacology-conference.elsevier.com/accommodation.asp)



## REGISTER NOW

### Registration Fees

US\$595 - **Early bird Academic delegate**  
(before September 30, 2010)

US\$695 - **Academic delegate**  
(after September 30, 2010)

US\$895 - **Early bird Industrial delegate**  
(before September 30, 2010)

US\$995 - **Industrial delegate**  
(after September 30, 2010)

US\$295 - **Student delegate**

### Registration rates include:

- Access to conference sessions and poster areas
- Abstract CD and special issue of Neuropharmacology
- Drinks reception during poster sessions
- Mid-session refreshments as scheduled in the conference program
- Lunch on November 11 and 12, 2010

Registration fees are payable in advance of the conference.

### Committee

Graham Collingridge, *University of Bristol, UK*

Rod Hubbard, *University of York and Vernalis Ltd, UK*

Janos Kiss, *Servier Research Institute of Medicinal Chemistry, Hungary*

Jean-Philippe Pin, *University of Montpellier, France*

Michael Spedding, *Servier Research Institute, France*

### Conference Secretariat

Amy Hill

20th Neuropharmacology Conference Secretariat

**Tel:** +44 (0) 1865 843051

**Fax:** +44 (0) 1865 843958

**Email:** [a.hill@elsevier.com](mailto:a.hill@elsevier.com)

**Mail:** Amy Hill, Elsevier, The Boulevard,  
Langford Lane, Kidlington, Oxford OX5 1GB, UK

### Cancellations

Substitutions may be made at any time but please advise the Conference Secretariat of a change of name. If you find it necessary to cancel the registration completely, please notify the Conference Secretariat immediately. Provided written notice is received by **Wednesday 29 September 2010**, a full refund will be given less a 10% administration charge. Provided written notice is received by **Wednesday 13 October 2010**, a 50% refund will be given. It is regretted for registrations cancelled after **Wednesday 13 October 2010**, or for no-shows at the conference, the full fee (100% cancellation charges) will be payable.

In the unlikely event that Elsevier shall deem it necessary to cancel the conference, all pre-paid registration fees will be reimbursed. Elsevier shall not be liable for reimbursing the cost of travel or accommodation arrangements made by individual delegates.

**REGISTER NOW at: [www.neuropharmacology-conference.elsevier.com](http://www.neuropharmacology-conference.elsevier.com)**



# MEETING INVITATION

## *Pharmacology Havana 2010*

*4<sup>th</sup> International Congress of Pharmacology  
and Therapeutics*



13-16<sup>th</sup> December, 2010  
MELIA HABANA HOTEL

*9<sup>th</sup> National Congress of the Cuban Society of Pharmacology*

*6<sup>th</sup> National Workshop on Pharmacoepidemiology*

*5<sup>th</sup> Workshop on Pharmacovigilance*

*10<sup>th</sup> Anniversary of Pharmacovigilance Cuban Coordinating Unit*

*2<sup>nd</sup> National Symposium on the Teaching of Pharmacology*

*2<sup>nd</sup> Symposia on Therapeutic Updating in Cancer, Asthma  
and Endocrinology*

*1<sup>st</sup> International Symposium on Alternative Pharmacology and  
Toxicology*

*1<sup>st</sup> International Symposium on Pharmacogenetics  
Meeting of Iberoamerican Society of Pharmacogenetic*

*1<sup>st</sup> Workshop on Research and Development of Generic Drugs*

**Web site: <http://www.pharmacologyhavana.com>**

Pharmacology  
International

June 2010



# Pharmacology Havana 2010

The Cuban Society of Pharmacology invite you to participate in Pharmacology Havana 2010, the Congress for those that believe in Pharmacological Sciences

**ABSTRACTS** should be written in accordance to the instructions at the Congress official web site <http://www.pharmacologyhavana.com> and they should be sent ON LINE before June 15<sup>th</sup>, 2010. A copy should be also sent to Dr. Mario Landys Chovel Cuervo, [mlandys@finlay.edu.cu](mailto:mlandys@finlay.edu.cu)

**Inscription Fee: (not USD)**

Delegates 250 € (320 CUC), Accompanist and Students 150 € (200 CUC) (before July 30<sup>th</sup>, 2010)

Delegates 350 € (450 CUC), Accompanist and Students 200 € (250 CUC) (After August 1<sup>st</sup>, 2010)

Payment should be preferable accomplished by credit card, please see instructions at the web site.

Alternatively a transfer might be addressed to **Pharmacology Havana 2010**, Account number: 0300000004061820 at Banco Financiero Internacional (BFI). Address: BFI Office, 5<sup>th</sup> Ave. and 92<sup>nd</sup>, Havana, SWIFT Code: **BFICCUHH**

## TOURISTIC PACKAGE (For 5 nights, CP+ 4 days of lunch in Melia Habana Hotel)

CP includes Lodging + Breakfast. Greeting at Havana Airport. Transfers: Airport / Selected Hotel / Airport

HOTEL	PLAN	TYPE OF ROOM (CUC)		
		DOUBLE (& Price for 2 persons)	SINGLE	
Neptuno-Tritón	3***	CP	512.00	321.00
Kohly-Bosque	3***	CP	432.00	292.00
Panorama	4****	CP	556.00	374.00
Meliá Habana	5*****	CP	748.00	579.00

Contact Travel Agency ECOTUR S.A.



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**Professional Organizers:**

Daybis Pavia Martínez

E-mail: [ecotureventos@yahoo.es](mailto:ecotureventos@yahoo.es)

## PRELIMINARY PROGRAM

### Monday, December 13<sup>th</sup>.

09:00-14:00 Registration  
15:00-19:00 Opening Ceremony and Lectures  
19:30-22:30 Welcome Cocktail.

### Tuesday December 14<sup>th</sup>

09:00-11:00 Lectures  
11:00-11:30 Break  
11:30-15:00 Workshop and Symposia

*Room 1: Pharmacology Teaching*

*Room 2: Pharmacoepidemiology*

*Room 3: Therapeutic Updating: Oncology*

*Room 4: New therapeutic targets*

15:00-16:00 Lunch

16:00-17:00 Poster Session.

17:00-21:00 Visit to interesting scientific and cultural sites



### Wednesday, December 15<sup>th</sup>.

09:00-11:00 Lectures

11:00-11:30 Break

11:30-14:00 Workshop and Symposia

*Room 1: Pharmacology Teaching*

*Room 2: Workshop of Generic Drugs*

*Room 3: Therapeutic Updating: Asthma*

*Room 4: Symposium of Pharmacovigilance*

14:00-16:00 Lunch

16:00-17:00 Poster Session.

17:00-21:00 Visit to interesting scientific and cultural sites

### Thursday, December 16<sup>th</sup>

09:00-11:00 Lectures

11:00-11:30 Break

11:30-14:00 Workshop and Symposia

*Room 1: Symposium of Pharmacovigilance*

*Room 2: Alternative methods in Pharmacology*

*Room 3: Therapeutic Updating: Endocrinology*

*Room 4: Cuban biotechnological products and their therapeutic impact.*

14:00-16:00 Lunch

16:00-17:00 Closing Ceremony.

Presentation of the winners of the Fourth Edition of the National Prizes of Pharmacology.

17:00-21:00 Farewell party

**For Detailed Information & Registration:**

**Dr. René Delgado Hernández**

**President of the Organizing Committee.**

**Telephone: 537-271 8331 Fax: 537-272 0653**

**E-mail: [rdelgado@infomed.sld.cu](mailto:rdelgado@infomed.sld.cu)**

**Registration: ON LINE (Instructions at the web site)**

Web site: <http://www.pharmacologyhavana.com>

# International Research Funding Opportunity



European College of Neuropsychopharmacology

**ecnp**

## Research Grants for Young Scientists

### Who can apply?

To qualify for an ECNP Research Grant for Young Scientists, the applicant must:

- be a citizen of a European country (including Russia, Turkey and Israel)
- have a PhD or MD degree
- normally be within the first 5 years of employment after receiving the PhD or MD degree
- be actively engaged full-time in clinical or basic research, in neuropsychopharmacology and/or closely related disciplines at an institute or department with an ECNP-member as supervisor
- have a good working knowledge of the English language
- be able to fulfil the obligations of an awardee

### Application period

The application period for a certain year runs from 15 June 2010 until 15 January 2011.

### Payment conditions

Each grant consists of a maximum amount of EUR 50,000. All expenses and costs related to visa, working permit, overhead costs (max 20%), travel, taxes, insurance, *etc.*, have to be covered by the amount granted or by sources of support other than ECNP.

The money related to the grant is transferred by ECNP to the home institute on basis of an approved project including budget submitted by the applicant:

- after the budget is approved and at least three months before the start of the grant period 80% of the money will be transferred to the home institute as a pre-payment,
- 20% of the money will be transferred after the project and finalisation of the obligations by the awardee and upon approval by ECNP of the final account. At the same time the pre-payment status of the 80% will be changed into a fixed payment status.

### Period project

The duration of the project to be proposed is between 3 and 12 months, starting within a year after the application is granted. The project should be carried out at an institute other than the current home institute.

### Practical involvement of ECNP

Apart from the selection procedure, the transfer of the money and the check of the final account there is no involvement of ECNP in any organisational and/or administrative process regarding the grant.

### Selection procedure

The ECNP Award Committee will review all applications for selection. The ECNP Office will inform all applicants of the outcome of the selection before March 30, 2011. There is no additional correspondence about the outcome.

Visit [www.ecnp.eu](http://www.ecnp.eu) for a full description.



Career Opportunity

## Science Officer

(Permanent position)

**Salary:** Euros 40,000–55,000 (net per year before income tax)

**Location:** Paris, France

**Closing date:** 16 August 2010

The International Council for Science (ICSU) is seeking a Science Officer to assist with the planning and implementation of ICSU's initiatives.

ICSU is a non-governmental scientific organization with a global membership. ICSU members include 121 national scientific bodies (mostly national academies of science) covering 141 countries, 30 International Scientific Unions, and 21 International Scientific Associates. Activities focus on three areas: International Research Collaboration; Science for Policy; and Universality of Science. This job offers a unique opportunity for the right candidate to help ICSU in its mission to strengthen international science for the benefit of society.

The Science Officer will assist with the planning and implementation of ICSU's initiatives, with a focus on sustainability research including global environmental change. Examples of work tasks include support to ICSU committees, interaction with ICSU partners and members, and coordination of international research programmes. The ICSU Secretariat, located in Paris, France, is a small international team of 16 people and the ability to work in close cooperation with others is important.

### ICSU is seeking candidates with the following:

#### *Qualifications and knowledge*

- An advanced scientific degree (preferably Doctorate) in a relevant natural or social science discipline and a further 5 years research or science management experience; and a broad interest in science.
- Demonstrated experience in science project/programme development and coordination.
- Excellent knowledge of English and preferably some knowledge of French and/or other languages.
- Good working knowledge of MS Office systems, and of electronic databases and Web sites.

#### *Skills*

- Ability to draft reports and summarize scientific information.
- Good organisational skills and the capacity to deliver on allocated tasks and respond in a timely manner to deadlines.
- Positive and constructive attitude.
- Action-orientated and responsible.
- Creative and willing to take initiative.
- Good interpersonal skills and readiness to work within a team environment.

The salary (Euros 40,000–55,000 net per year before income tax) will be dependent on the experience and qualifications of the candidate. Applicants are requested to address the above description and qualifications in a cover letter and attach a curriculum vitae with the name and contact details of three referees. They are invited to indicate how serving in this position would support their own future science career objectives. Applications, with 'Science Officer' in the subject line, should be sent via email to [recruitment@icsu.org](mailto:recruitment@icsu.org) and addressed to Professor Deliang Chen, Executive Director, International Council for Science (ICSU).

The closing date for applications is **16 August 2010**.

For more information on ICSU, please visit: [www.icsu.org](http://www.icsu.org)



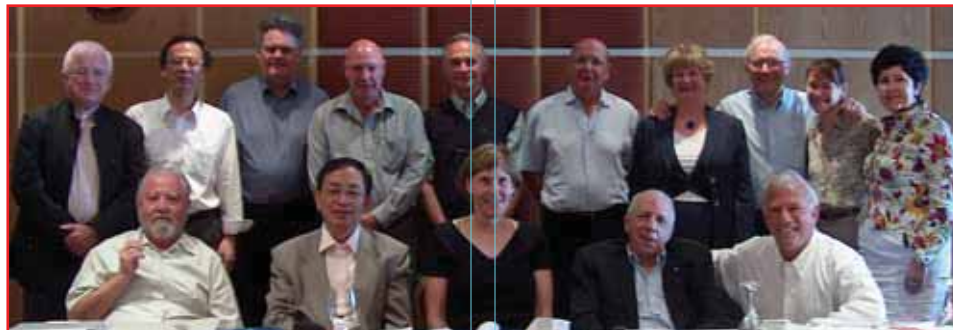
# Pharmacology International

Published June and December

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Pharmacology  
International

June 2010

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Tel: 1.913.588.7533  
Fax: 1.913.588.7373  
[iuphar@kumc.edu](mailto:iuphar@kumc.edu)  
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### Contributions:

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