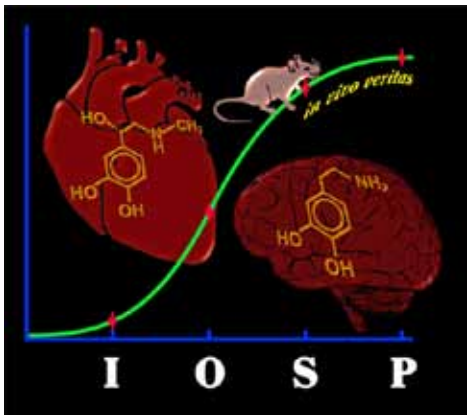
Pharmacology International

No. 71 December 2008 The semi-annual newsletter from the International Union of Basic and Clinical Pharmacology

In This Issue



The IUPHAR Initiative in Integrative and Organ Systems Pharmacology

Largely as a result of the shift in focus of biological research to a more reductionist approach, there has been a decreased emphasis in pharmacological training essential for the translation of basic findings into useful therapies. This is particularly true for integrative studies that link molecular or cellular understanding to the functioning of the whole organism. It is now generally agreed that more emphasis must be placed on translational research in order to improve the health and well-being of mankind. However, not only are students not being adequately trained in the principles and techniques of integrative pharmacology, the number of senior scientists able to provide such training in this area is diminishing. To address this important issue IUPHAR is pursuing a vigorous international initiative to restore training in these principles and techniques.

Over the past 20 years the growing use of the powerful techniques of molecular biology has fueled a reductionist approach to pharmacological research (Strange, 2005). Although reductionist methods are an essential component of all biological research, in themselves they do not provide a complete understanding of living organisms or of the totality of drug action. Organisms, as well as their constituent organ systems, are much more than the sum of their parts, and cannot be understood solely by defining mechanisms at a cellular and sub-cellular level. Thus, responses in intact animals result not only from complex interactions among molecules, cells and tissues, but also from the interplay among organs and organ systems.

The increased emphasis on reductionist approaches has diminished research and training in integrative and organ systems pharmacology. It is estimated that 25% of academic pharmacologists in the UK who teach integrative pharmacology are due to retire in the next 5 years (British Pharmacological Society and the Physiological Society, 2006). Loss of this expertise will

Continued on page 2...

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IOSP (continued)

diminish the ability of pharmacologists to communicate with other scientists in the biomedical sciences, hindering the transfer of basic discoveries to the clinic. A well-rounded biomedical scientist must be able to discuss, and critically evaluate and design, meaningful experiments at the molecular, whole animal and clinical levels.

The decline in the number of integrative pharmacologists has been contemporaneous with a marked decrease in the production of new, safe and efficacious drugs. This decline in drug discovery has occurred despite the promised impact of the human genome project and the large investments made by the pharmaceutical industry in high-throughput technologies associated with recombinant protein bioassays and combinatorial chemistry (Shankley, et al., 2006). With the re-emergence of integrative and organ system pharmacological research as a critical tool in the search for new drugs (Williams, 2005), the world-wide shortage of experts in this field has become apparent (Collis, 2006). Countries, such as India, China and Egypt, with nascent pharmaceutical companies and drug and environmental regulatory agencies are also hindered by the paucity of translational pharmacologists. Less scientifically developed societies suffer from the delays in creating new medications and vaccines, as well as from a lack of ready access to information on translational pharmacology necessary for a thorough evaluation of the therapeutic and toxic potential of new agents. Improving local knowledge and training in integrative pharmacology is also needed to develop the pharmaceutical research.

Although pharmacologists are trained in molecular and cellular biology, a drug candidate must undergo pharmacological testing in isolated organ systems and intact animals before being administered to humans. However, there is a diminishing supply of scientists trained to conduct such research. This shortage has not only hindered the development of new drugs, it threatens the complete elaboration of the therapeutic potential, and toxicities, of existing agents. Initial attempts to address this challenge include training programs in several countries sponsored by the government, foundations and the pharmaceutical industry. However, the lack of instruction in this area is still having a negative impact on translational research worldwide.

To address this issue, IUPHAR has assembled an international committee to discuss strategies for meeting the global need

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IOSP (continued)

Participants Wanyun Zeng (left) and Jianbing Qin (right) focus on the hands-on laboratory skills.

for training in translational pharmacology. IUPHAR IOSP Workshops including didactic and laboratory instruction in translational pharmacology are scheduled in New Delhi, India (December, 2008) and Khon Kaen, Thailand (March, 2009), with programs in Africa now in the planning stages. The committee is updating a list of print and on-line instructional material that will be made freely available to scientists worldwide. Efforts are also underway to develop knowledge objectives for courses in integrative and organ systems pharmacology. IUPHAR is pleased to provide guidance to any member society requesting assistance in establishing this program in its country. •

David B. Bylund
Chair, IUPHAR IOSP Initiative
iuphar@kumc.edu

Reference List

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international union of basic and clinical pharmacology

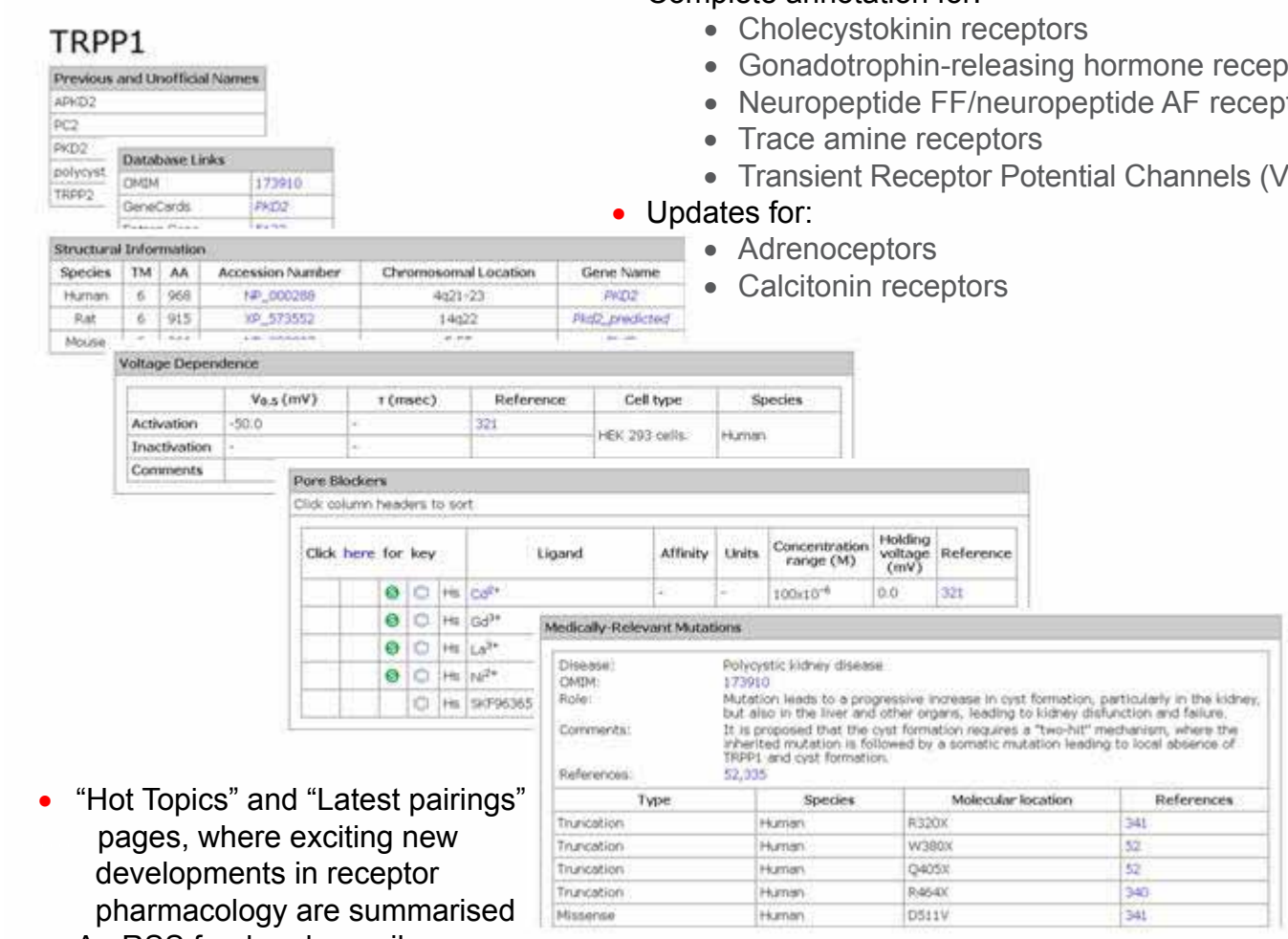
THE LATEST FEATURES NOW AVAILABLE ON THE IUPHAR DATABASE OF RECEPTORS AND ION CHANNELS

www.iuphar-db.org

The IUPHAR database of receptors and ion channels (IUPHAR-DB) is a freely accessible, peer-reviewed online resource, providing detailed structural, functional, pharmacological and pathophysiological annotation. It currently includes information on 240 liganded G-protein coupled receptors (GPCRs) and 139 orphan GPCRs, and has recently expanded to provide information on 141 voltage-gated ion channels (VGICs). A comprehensive introduction to each receptor family is also included on the website.

New to IUPHAR-DB:

- Complete annotation for:
  - Cholecystokinin receptors
  - Gonadotrophin-releasing hormone receptors
  - Neuropeptide FF/neuropeptide AF receptors
  - Trace amine receptors
  - Transient Receptor Potential Channels (VGIC)
- Updates for:
  - Adrenoceptors
  - Calcitonin receptors



TRPP1

Previous and Unofficial Names

APKD2
PC2
PKD2
polycyst
TRPP2

Database Links

OMIM	173910
GeneCards	PKD2

Structural Information

Species	TM	AA	Accession Number	Chromosomal Location	Gene Name
Human	6	968	NP_000288	4q21-23	PKD2
Rat	6	915	XP_573552	14q22	Pkd2_predicted
Mouse					

Voltage Dependence

	$V_{0.5}$ (mV)	τ (msec)	Reference	Cell type	Species
Activation	-50.0	-	321	HEK 293 cells	Human
Inactivation	-	-			
Comments					

Pore Blockers

Click column headers to sort

Click here for key	Ligand	Affinity	Units	Concentration range (M)	Holding voltage (mV)	Reference
S C Hs	Ca^{2+}	-	-	$100x10^{-6}$	0.0	321
S C Hs	Gd^{3+}					
S C Hs	La^{3+}					
S C Hs	Ni^{2+}					
C Hs	SKF96365					

Medically-Relevant Mutations

Disease: Polycystic kidney disease
OMIM: 173910
Role: Mutation leads to a progressive increase in cyst formation, particularly in the kidney, but also in the liver and other organs, leading to kidney disfunction and failure.
Comments: It is proposed that the cyst formation requires a "two-hit" mechanism, where the inherited mutation is followed by a somatic mutation leading to local absence of TRPP1 and cyst formation.
References: 52,335

Type	Species	Molecular location	References
Truncation	Human	R320X	341
Truncation	Human	W380X	52
Truncation	Human	Q405X	52
Truncation	Human	R464X	340
Missense	Human	D511V	341

- "Hot Topics" and "Latest pairings" pages, where exciting new developments in receptor pharmacology are summarised
- An RSS feed and e-mail subscription list, allowing users to receive immediate notification of updates to IUPHAR-DB

We encourage you to draw the attention of your students to the database, which is a valuable teaching resource. Over the coming year IUPHAR-DB will expand to include complete annotation for the full complement of voltage- and ligand-gated ion channels. Other developments will include improved database search facilities and new ligand-centred pages that summarise data about individual ligands, such as their affinities for all receptors in IUPHAR-DB. ●

Valerie Hale (Database Curator) and Joanna Sharman (Database Developer)
Email: curators@iuphar-db.org

Screenshots shown are of a sample of tables from the VGIC database pages.

Pharmacology International

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Canadian Society of Pharmacology and Therapeutics
La Société Canadienne de Pharmacologie et de Thérapeutique

IUPHAR congratulates the NEW

Canadian Society of Pharmacology and Therapeutics (CSPT)

To reflect the evolving face of pharmacology research and teaching in Canada, the

Pharmacological Society of Canada

and the

Canadian Society for Clinical Pharmacology

have merged!

The goal of CSPT is to be THE national advocate for the promotion of research and education in the disciplines of pharmacology and experimental therapeutics.

The New Executive Board

President: James Hammond
Past Presidents: Kanji Nakatsu (PSC) & Micheline Piquette-Miller (CSCP)
Vice President: Richard Kim
Secretary/Treasurer: Shinya Ito
Scientific Program Chair: Michael Rieder
Executive Administrator: Kathryn Gaebel

To learn more about CSPT and the upcoming "Innovations in Pharmacology" conference scheduled May 30th - June 2nd, 2009, please visit

www.PharmacologyCanada.org

NEW PHARMACOLOGY SOCIETY LAUNCHED IN KENYA

The Kenyan Society for Basic and Applied Pharmacology (KESoBAP) was officially established earlier this year. The forming of the new national society of pharmacology in Africa is hopefully the first tangible achievement of the Pharmacology for Africa initiative (PharfA: www.iuphar-africa.org). I hope we will be welcoming the new society into IUPHAR in the near future. ●

Tiaan Brink, Professor of Pharmacology, North-West University, Potchefstroom Campus, South Africa

KENYAN SOCIETY FOR BASIC AND APPLIED PHARMACOLOGY

PROFILE

The Kenyan Society for Basic and Applied Pharmacology was formed in August 2008.
The office bearers are as follows:

(i) The Chairperson: Prof. Anastasia N. Guantai
(ii) The Vice-Chairperson: Dr. Peter M. Waweru
(iii)The Secretary: Dr. Paul M. Mbugua
(iv) The Assistant Secretary: Dr. Jescah Wesonga
(v) The Treasurer: Dr. George O. Osanjo
(vi) The Assistant Treasurer: Dr. Charles G. Githinji

NAME

The Society shall be known as “Kenyan Society for Basic and Applied Pharmacology” (KESoBAP).
The Kenya Society for Basic and Applied Pharmacology is registered as a non-political, non-profit, non-religious and non- racial organization. It is governed by the Societies Act of the Republic of Kenya which takes precedence whenever there may be a conflict between this constitution and the Act.

ADDRESS

Unless and until otherwise notified, the current address of the Society shall be: The Department of Pharmacology & Pharmacognosy, P.O. Box 19676 – 00202 KNH, Nairobi, Kenya.

OBJECTIVES

The objectives of the Society shall be:

a) To foster, promote, encourage, develop and support teaching and research in basic and applied pharmacology.
b) To promote communication and cooperation between societies, organizations and industries with similar interests.
c) To create forums to present and exchange ideas
d) To liaise with the government and local authorities in the event of emergencies, epidemics and other health related needs.
e) To be proactive in the development of young scientists in basic and applied pharmacology through training and needs driven innovative research.
f) To form, if and when necessary, branches to promote the Society’s activities in the Republic of Kenya.
g) To create a medium for community outreach and interaction so as to break the barriers that hinder effective utilization of health knowledge and resources.
h) To do all such things which are or may be deemed incidental to achievements of the Society’s objectives.

MEMBERSHIP

Any person who is, or has been, engaged in teaching or research or practice of pharmacology, or related sciences shall be eligible for membership of the Society and shall, subject to the approval of the Management Committee, become a member on payment of a subscribed fee which shall be determined by the Management Committee.

PRACP CALL FOR NOMINATIONS
WERNER KALOW BEST PAPER AWARD IN CLINICAL PHARMACOGENETICS

The Pacific Rim Association for Clinical Pharmacogenetics (PRACP) was founded in 1990 by Werner Kalow and several leading investigators in the field of pharmacogenetics (society home page: www.med.niigata-u.ac.jp/psy/PRACP). As a non-profit learned professional society, PRACP aims to contribute to the advancement of population based clinical pharmacogenetics research, collaboration across diverse global regions as well as education in pharmacogenetics and personalized medicine. PRACP is an associate member society of IUPHAR.

In memory of Professor Kalow, PRACP established the "Werner Kalow Best Paper Award in Clinical Pharmacogenetics". The award will be presented every other year. The first will be given at the next PRACP meeting in October 2009 in Hong Kong.

The eligibility criteria are:

- An innovative clinical pharmacogenetics study already published in the calendar years 2007 or 2008 (i.e., from January 2007 to December 2008).
- The paper reports a study conducted in human subjects with a focus on the genetic basis of variability in response (efficacy and toxicity) to medicines.
- We are seeking a paper with an innovative idea that breaks new ground in clinical pharmacology and human therapeutics, answers a novel hypothesis while also raising new fundamental mechanistic questions for human biology and clinical pharmacogenetics.
- Adherence to high socio-ethical standards. Considerations (in the paper) for the downstream impact of scientific discoveries on the society would be an additional asset.
- All geographical regions and authors from any institution (public, private, government, NGO, other) are eligible and can nominate their own paper.
- If the committee does not identify a suitable highly original clinical pharmacogenetics study that meets high innovation standards (in the opinion of the award committee members), the award may be postponed to the subsequent nomination cycle.

The award will be given to all authors named on the top-ranked paper. Investigators, including the award committee members, can nominate papers by independent authors and research groups.

The nomination process requires a concise description on why the authors' study is original and innovative (written by the nominating authors, to be

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PRACP Call for Nominations (continued)

submitted by email to the PRACP Secretariat). The study description paragraph in **the nomination letter should be no more than 75 words**, indicating succinctly the key innovative idea and findings in 2 or 3 sentences. Longer nominations will be disqualified. For rapid peer review and selection, no acknowledgement letters or written peer review assessment will be provided to the nominated authors.

The award recognizes that the paper stood the rigorous standards of the international peer review committee. One of the authors from the selected best paper (first or senior author, or a suitable designate approved by all authors) will be invited to attend the PRACP conference to deliver a state of the art lecture on the paper. The lecture will be published as an expert review in the PRACP Journal, *Current Pharmacogenomics and Personalized Medicine*.

While there is no monetary award, PRACP will cover the presenter's basic economy airfare and three nights hotel accommodation. An appropriately framed award certificate will be presented at the PRACP annual meeting in recognition of the work and the authors of the paper.

An international panel of independent researchers will select the best paper:

Award Committee Membership (2008-2009, in alphabetical order)

- Leif Bertilsson (Karolinska Institute, Sweden)
- Julia Kirchheiner (University of Ulm, Germany)
- Deanna L. Kroetz (University of California at San Francisco, USA)
- Edmund J.D. Lee (National University of Singapore, Singapore)
- J. Steven Leeder (Children's Mercy Hospital and Clinics, University of Missouri-Kansas City, USA)
- Collen Masimirembwa (African Institute of Biomedical Science and Technology, Zimbabwe)
- Vural Ozdemir (University of Montreal, Canada) (Co-Chair)
- Kazutaka Shimoda (Dokkyo University, Japan)
- Toshiyuki Someya (Niigata University, Japan) (Co-Chair)

Observing or student representative members (non-voting)

- Peter Kalow (Toronto, Canada)
- Yutaro Suzuki (Niigata University, Japan)
- Raphaëlle Stenne (University of Montreal, Canada)

The nomination cover letter, together with a PDF copy of the nominated paper should be submitted (by email only) to the address below, **no later than MARCH 23, 2009**.

Dr. Vural Ozdemir, PRACP Secretary
Department of Social and Preventive Medicine
Bioethics Programs, Faculty of Medicine, University of Montreal
vural.ozdemir@umontreal.ca

Following peer review, only the author(s) of the selected best paper will be contacted in early summer prior to the 2009 PRACP Meeting. ●

On behalf of the award committee,

Vural Ozdemir
PRACP Secretary
vural.ozdemir@umontreal.ca

Toshiyuki Someya
PRACP President
psy@med.niigata-u.ac.jp

Pharmacology International

December 2008

2009 Anniversaries

IUPHAR congratulates the following member societies:

Italian Pharmacological Society
1939 - 2009

Czech Society for Experimental and Clinical Pharmacology
1959 - 2009

Slovak Pharmacological Society
1959 - 2009

American College of Clinical Pharmacology
1969 - 2009

Indian Pharmacological Society
1969 - 2009

Portuguese Society of Pharmacology
1969 - 2009

Croatian Pharmacological Society
1979 - 2009

Swiss Society of Pharmacology and Toxicology
1979 - 2009

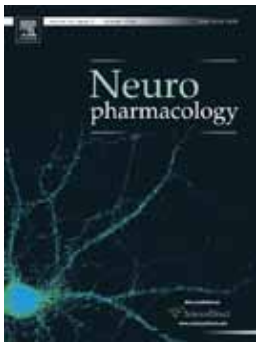
Greek Society of Pharmacology
1984 - 2009

Courtesy of www.clipartguide.com

MEETING REPORT

Ligand-Gated Ion Channels

18th *Neuropharmacology* Conference in association with NC-IUPHAR



Organised by Graham Collingridge, Richard Olsen, John Peters and Michael Spedding with Charlotte Wilkins of Elsevier Ltd.

This meeting was held in Washington DC, USA, November 12-14, as a satellite prior to the 2008 meeting of the Society for Neuroscience. The purposes of the meeting were introduced by Graham Collingridge (Editor-in-Chief of *Neuropharmacology*) and Michael Spedding (Chairman of NC-IUPHAR): to bring together leading experts on the various Ligand-gated Ion Channels (LGICs) and members of the Nomenclature Committees (NC) of IUPHAR to discuss their latest research findings and to promote the official nomenclature for LGICs as recommended by NC-IUPHAR. The meeting covered all three structural categories of LGICs - namely the pentameric Cys-loop family (nicotinic acetylcholine, 5-HT_3, $GABA_A$, glycine and zinc-activated receptors), the tetrameric family (NMDA, AMPA and kainate subtypes of glutamate receptors) and the trimeric P2X receptors.

New IUPHAR nomenclature for ionotropic glutamate receptor subunits

NMDA			AMPA			Kainate		
Old	HUGO	IUPHAR	Old	HUGO	IUPHAR	Old	HUGO	IUPHAR
NR1	*GRIN1*	GluN1	GluR1/GluR-A	*GRIA1*	GluA1	GluR5	*GRIK1*	GluK1
NR2A	*GRIN2A*	GluN2A	GluR2/GluR-B	*GRIA2*	GluA2	GluR6	*GRIK2*	GluK2
NR2B	*GRIN2B*	GluN2B	GluR3/GluR-C	*GRIA3*	GluA3	GluR7	*GRIK3*	GluK3
NR2C	*GRIN2C*	GluN2C	GluR4/GluR-D	*GRIA4*	GluA4	KA-1	*GRIK4*	GluK4
NR2D	*GRIN2D*	GluN2D				KA-2	*GRIK5*	GluK6
NR3A	*GRIN3A*	GluN3A						
NR3B	*GRIN3B*	GluN3B						

The Table shows the more common older names for the glutamate receptor subunits along with genes names from HUGO and the closely linked new nomenclature. The new nomenclature was widely adopted by the meeting participants.

A history of ionotropic glutamate receptor research and the new nomenclature for glutamate LGICs (see table) was provided by David Lodge (University of Bristol, UK) who outlined the early experiments that divided glutamate receptors into NMDA, AMPA and kainate receptor subtypes. Roger Nicoll (University of California – San Francisco, USA) and Peter Seeburg (Max Planck Institute for Medical Research, Germany) then brought the meeting right up to the minute with a molecular characterization of the subunit composition of AMPA receptors at hippocampal synapses. By using an *in vivo* conditional knockout strategy (floxed alleles and Cre recombinase) for individual or combinations of AMPA receptor subunits, Nicoll showed that GluA1A2 heteromers account for 80-85% of fast synaptic current, and GluA2A3 heteromers for most of the remaining 15-20% in hippocampal slices.

Roger Nicoll describes AMPA subunit functions

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Ligand-Gated Ion Channels Conference (continued)

GluA4 appears to have little functional significance. Double knock-outs, *e.g.*, GluA2&A3 or GluA1&A2, can lead to a few homomers of the remaining subunit. However, a triple conditional knockout of GluA1,A2&A3 produced a mouse with no fast excitatory synaptic transmission. Surprisingly, in many other respects, the mice appeared normal, *e.g.*, synaptic morphology, NMDA currents, and NMDA receptor subunit switching from GluN2B to GluN2A. Seeburg, using a similar strategy, further showed that region-specific knock-down of the GluA1 subunit in the forebrain resulted in impaired short-term but enhanced long-term spatial memory. Interestingly, hippocampal CA1 pyramidal neurones in these GluA1 KO mice showed poor place field resolution.

Steve Heinemann, Peter Seeburg and Graham Collingridge embrace the new glutamate nomenclature

Daniel Choquet (University of Bordeaux, France) described exciting results from studies on the surface mobility of AMPA receptors. CaMKII phosphorylation of Stargazin was found to be necessary for activity-dependent immobilisation of AMPA receptors at the synapse by PSD-95. In addition, it was shown that AMPA receptor mobility allows fast replacement of desensitised receptors by naïve ones. Together, these data imply that an initial high frequency stimulation reduces the dynamic response of AMPA receptors to further bouts of stimulation in a CaMKII-dependent manner.

Daniel Choquet explaining AMPA receptor mobility

The disappointing record of NMDA receptor ligands as treatments for neurological diseases (Chris Parsons, Merz, Germany) was contrasted with the huge potential for these and AMPA receptor antagonists for psychiatric illnesses such as depression (Michael Spedding, Servier, France) and other mood disorders (Husseini Manji, NIMH, USA), and cognitive deficits of Alzheimer's Disease (Chris Parsons). Clearly, the clinical application of these drugs remains an exciting prospect.

The functional and pharmacological characterisation of $GABA_A$ receptor subunits were linked to the respective 19 genes by Richard Olsen (University of California - Los Angeles, USA) who also formulated and ranked criteria for accepting the identity of hetero-oligomeric combinations as native receptor subtypes. Trevor Smart (University College of London, UK) using site-directed mutagenesis cleverly determined the role of the hydrophobic core of the transmembrane domains of $GABA_A$ receptors in influencing agonist potency as well as the probability of spontaneous

Trevor Smart waits for the audience to quiet

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Ligand-Gated Ion Channels Conference (continued)

openings of the channel. He also reported a novel regulator of inhibitory synaptic transmission involving the permeating Cl^- ion. Essentially, using internal Cl^- concentrations expected *in vivo*, and by measuring the decays of IPSCs, inhibitory synaptic transmission was found to be much faster than previously suspected.

The focus switched to P2X receptors and Baljit Khakh (University of California - Los Angeles, USA) described a calcium sensor protein VILIP1 which binds to P2X2 channels in a calcium-dependent manner and enhances sensitivity to ATP, increases peak responses and promotes surface expression of P2X2 receptors. This is an activity dependent mechanism occurring in hippocampal neurones, which may explain the increased signalling from ATP via the P2X2 receptors during increased neuronal firing.

Jean-Pierre Changeux (Institut Pasteur, France) introduced the history of nicotinic acetylcholine receptors and explained the concept of allosterism of these LGICs via complex linkages and interactions between amino acids in the neighbouring subunits, the interface of which forms the agonist binding site. His group in Paris has interrogated these conformational changes using X-ray crystallography of open and closed states of homologous LGICs from two bacterial species. This shows a re-organisation of the inter-subunit interface and a 15° tilt of the M2 and M3 a-helices away from the channel pore between the closed and open states. Joe Lynch (University of Queensland, Australia) used voltage-clamp fluorometry, a new technique to label disulphide bonds, to investigate in real time these same conformational changes upon activation of glycine receptors. He showed conformational changes in M2 that varied with different agonists.

Jean-Pierre Changeux explains the twists and tilts of nicotinic allosterism

The nicotinic receptor theme was continued by Neil Millar (University College of London, London) using the molecular techniques of subunit hybridisation, artificial chimaeras, and site-directed mutagenesis to study the pharmacology and biophysics of subunit combinations. He also demonstrated the role a novel interacting protein, RIC-3, which modulates ER folding and assembly of these LGICs. The importance of nicotinic LGICs in agriculture was brought to the attention of the meeting with the demonstration of a site mutation in an insect rice pest which leads to insecticide resistance.

5-HT_3 receptors were introduced by Sarah Lummis (University of Cambridge, UK), who described aspects of the structure-function relationship of this receptor class. The important residues of the principle and complementary ligand-binding loops have been deduced and their roles in ion selectivity and conductance revealed.

Sarah Lummis describes the binding pocket of the 5HT3 receptors

John Peters (University of Dundee, UK) has used the 5-HT3 receptor as a model of cys-loop receptor function to study how specific amino acid residues in the membrane-associated (MA) stretch of the large intracellular loop influence single ion channel conductance and Ca^{2+} permeability. Specific amino acids in the MA domain have been identified and these may form part of lateral channel portals in comparison to 5-HT3 receptors with cryo-electronmicroscopic images of the nicotinic ACh receptor and its ion permeation pathway.

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Ligand-Gated Ion Channels Conference (continued)

Chris Parson questions Heinrich Betz about the non-classical NMDA receptors

Heinrich Betz (Max Planck Institute for Brain Research, Germany) spoke elegantly about modulation of glycine-sensitive subunits of NMDA receptors by divalent cations. The non-classical GluN1/GluN3 glycine receptor was described with an agonist site for glycine on the GluN3 subunit and an agonist/potentiator site for zinc on the GluN1 subunit. A surprising observation because, on the classical NMDA receptor, the glycine agonist site is on the GluN1 subunit and zinc is inhibitory.

Mark Mayer (National Institute of Child Health and Human Development, USA), investigating the requirement of kainate receptors for Na^+ and Cl^- ions, determined the binding site to be in the external vestibule of the channel. This binding pocket, which is conserved across animal phyla, maintains the dimerisation of pairs of kainate receptor subunits. Loss of the binding of these ions leads to dimer dissociation and hence desensitisation of the oligomeric kainate receptor complex. The binding sites are not fully saturated under natural conditions and hence changes in extracellular sodium and chloride concentrations may contribute to the functional plasticity of these LGICs.

Mark Mayer describes the role of sodium and chloride ions in kainate receptor desensitisation

David Jane and Graham Collingridge (University of Bristol, UK) presented the synthesis and pharmacological effects of a series of willardiine derivatives culminating in ACET, a potent antagonist for kainate receptors containing the GluK1 subunit. A role for this receptor in regulating mossy fibre excitability was clearly demonstrated: the calcium signal in identified giant boutons, labelled from the soma of dentate granule cells was attenuated by both ACET and LY382884, an established selective GluK1 antagonist. Interestingly some of the described effects of these GluK1 antagonists were less marked when hippocampal slices were prepared with different protocols.

Despite a complete knock-out of all kainate receptor subunits, Steve Heinemann (Salk Institute, USA) reported that the deprived mice, like those lacking AMPA receptors mentioned earlier, have only a mild phenotype. They did, however, show skin lesions which may reflect the importance of GluK1 receptors in small diameter afferents. Unlike the Bristol group, Heinemann reported that plasticity was more dependent on the GluK2, than GluK1, subunit. Importantly, features like RNA editing determine properties and abnormalities of kainate receptor function, which may contribute to mental illnesses and susceptibility to epilepsy. For example, Ca^{2+}-permeable GluK1-containing receptors can mediate LTP following perforant path stimulation in the presence of NMDA receptor antagonists.

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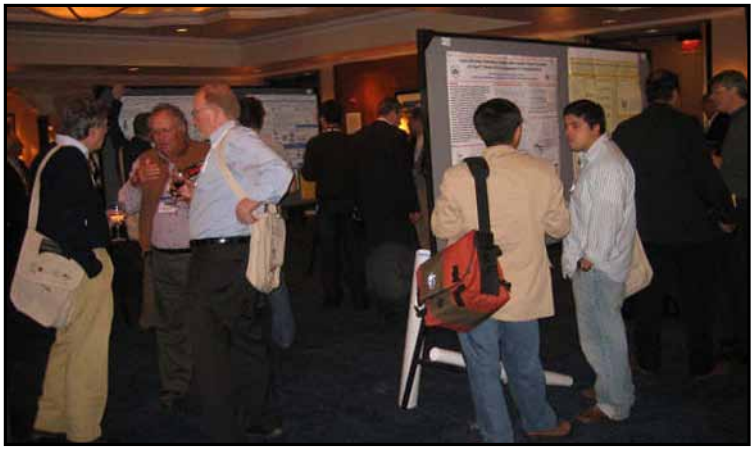
Ligand-Gated Ion Channels Conference (continued)

There were numerous highlights in the session including topics such as modulation of G-protein coupled receptor affinity and function by ligand-gated ion channels (Dennis Paul, Louisiana State University Health Sciences Center, USA), and the role of $GABA_A$ receptor tonic inhibitory conductance in nociception (Robert P. Bonin, University of Toronto, Canada). The meeting also showcased the talents of young graduate students and postdoctoral fellows who had a chance to present their recent research in a 'hot topics' session. The poster sessions were well attended and facilitated interactions and thought-provoking conversations among the meeting delegates.



The poster sessions were lively affairs

On behalf of IUPHAR, Michael Spedding presented prizes for the best young poster presenters:

Kasper B. Hansen
Emory University
USA

Gracia Quek
University of Sydney
Australia
(in her absence)

Olga Sergeeva
Heinrich-Heine University
Germany

The meeting was drawn to a close by Graham Collingridge and David Lodge who commented on the fact that all the speakers in the glutamate sessions had embraced the new nomenclature (see table on page 13). The 18th *Neuropharmacology* Conference in association with NC-IUPHAR on LGICs was a scientific and social success for established and promising young scientists alike and achieved the aim of promoting the values of common and agreed nomenclatures. More photos of speakers and participants at this event can be found at http://www.neuropharmacology-conference.elsevier.com/photos2008.htm . ●

Clare Gladding, Tom Bartlett, John Sherwood and David Lodge

LGIC nomenclature committee chairs L→R: John Peters (5HT3), Graham Collingridge (glutamate), Baljit Khakh (P2X), Neil Millar (nicotinic), Mike Spedding (NC-IUPHAR Chair), Richard Olsen (GABA), David Lodge (glutamate committee), Michael Jarvis (Industrial Representative), and Joe Lynch (glycine)

Pharmacology International

December 2008

The IXth World Conference on Clinical Pharmacology and Therapeutics

July 27 - August 1, 2008 Québec, Canada

CPT2008 Québec

CPT2008 MEETING REPORT

Traveling from 78 countries during the final week of July, nearly 1,800 participants of the IXth World Conference on Clinical Pharmacology and Therapeutics 2008 (CPT2008) enjoyed not only excellent speakers and science, but also had the opportunity to help celebrate the 400th anniversary of the founding of Québec City, Canada. Satellite meetings featured workshops on glucuronidation, competency-guided education for clinical pharmacology, pain pharmacology, PK-PD population modeling, and the exploration of a pediatric pharmacology network.

The July 27th opening ceremony of CPT 2008, which was held in the Québec City Convention Centre, included performances by Huronne-Wendat throat warblers (pictured at left) and Inuit dancers (above right), and a reenactment of a French/British conflict (lower left) that precipitated the construction of the fortress walls of the Old City. The talk-show format (lower right) featuring elected leaders of CPT2008 was a refreshing alternative to the standard opening speech.

During their interview, the Conference Co-Chairs (pictured at right), Stuart MacLeod (left) and Marc LeBel (right), described how clinical pharmacology is changing to meet the needs of the 21st century and the impact of these changes on the Clinical Pharmacology Division of IUPHAR. Patrick du Souich highlighted a number of the superb sessions the Program Committee had organized.

Richard Kim announced the merger of the *Pharmacological Society of Canada* and the *Canadian Society for Clinical Pharmacology* to become the *Canadian Society of Pharmacology and Therapeutics*. IUPHAR President, Sue Duckles, reminded the audience that IUPHAR celebrates its 50th anniversary in 2009, and that the next World Congresses will be in Copenhagen in 2010 and in Cape Town in 2014. The opening ceremony was followed by a reception.

Continued on page 17...

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CPT2008 MEETING REPORT (CONTINUED)

Giampaolo Velo (University of Verona) and Yola Moride (University of Montreal) presented New Approaches and Old Risks in Pharmacovigilance to CPT2008 registrants

Scientific discussions began at 7:15 a.m. each day with Meet the Expert Sunrise sessions that covered topics ranging from pain and therapies in children and pregnancy to private drug plans and the legal rights of patients. The ten plenary lectures, delivered by renowned scientists from six countries, and the 39 symposia provided stimulating presentations and discussions punctuated by coffee breaks that allowed time for viewing posters and visiting the 63 exhibition booths.

Some of the less conventional offerings included presentations on the challenges facing African pharmacology, whether pharmacology should be part of undergraduate medical curriculum, determining fair prices for medicines, and a global perspective on traditional Chinese medicine.

Members of WorldPharma 2010 and its sponsoring journal, "Basic & Clinical Pharmacology & Toxicology", greeted participants from their booth: (L→R) Michael Mulvany (University of Aarhus and WP2010 Secretary-General), Henrik Horneberg (BCPT Editorial Assistant), Tina Ludvig (BCPT Editorial Assistant), and Grete Mouret (BCPT Managing Editor)

Representatives from South Africa reminded registrants to mark their calendars for World Congress of Pharmacology in July, 2014 in Cape Town: (L→R) Wim du Plooy (Medical University of South Africa and President, South African Society of Basic and Clinical Pharmacology), Douglas Oliver (North-West University and President, World Congress of Pharmacology 2014), and Tiaan Brink (North-West University and Secretary, World Congress of Pharmacology 2014)

Evening sessions sponsored by various pharmaceutical firms addressed diverse subjects, such as policy and decision-making, pharmacokinetics, and translational medicine.

During CPT2008 coffee breaks, registrants gathered to view posters

Continued on page 18...

Continued from page 17...

CPT2008 MEETING REPORT (CONTINUED)

The Clinical Pharmacology Division General Assembly was convened on Wednesday, July 30th. The business meeting included election of the Council for 2008-2012. The new officers and councilors are:

Chair
Patrick du Souich, Canada

Vice-Chair
Don Birkett, Australia

Secretary
Petra Thürmann, Germany

Treasurer
María Isabel Lucena, Spain

Past Chair
Folke Sjöqvist, Sweden

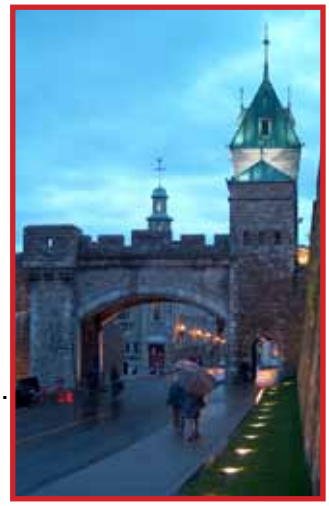
Councilors
Darrell Abernethy, USA
Gilberto Castañeda-Hernandez, Mexico
Guilherme Suarez-Kurtz, Brazil
Wim du Plooy, South Africa
Mahmoud Khayyal, Egypt
Hiroshi Watanabe, Japan
David Le Couteur, Australia
Hyung-Keun Roh, Korea
David Webb, UK
Wei Wei, China

Some members of the Clinical Pharmacology Division Board

Standing (L→R): Patrick du Souich, Kalle Hoppu, Guilherme Suarez-Kurtz, Lars Gustafsson, Darrell Abernethy, Emilio Sanz, Ingolf Cascorbi, and Mahmoud Khayyal, Seated (L→R): Wei Wei, Gilberto Castañeda-Hernandez, Petra Thürmann, Wim du Plooy, Hyung-Keun Roh, and David Webb

To view the full meeting report of the Clinical Pharmacology Division General Assembly, please visit http://www.iuphar.org/clin_meetings.html .

Besides outstanding scientific sessions, CPT2008 offered opportunities to experience the magnificent history and architecture of Québec City and the surrounding regions. Intrepid diners sampled the traditional Québécoise dish of *poutine* (French fries, gravy and melted cheese curds) or maple syrup pie. Colorful floral displays, horse-drawn carriages, and cobble-stone streets transported visitors to the 18th century. The Fun Night on Thursday evening whisked attendees back the 21st century with a lively circus arts performance in the tradition of Cirque du Soleil.



The original settlement of Québec City was guarded by stone walls and gates built during the 1700s

The Closing Ceremony was held on Friday afternoon, August 1st. The organizers of CPT2008 wish to thank their numerous sponsors and exhibitors, the student volunteers, and all the speakers who helped make the conference such a success. ●

MEETING REPORT
THE INTERNATIONAL SYMPOSIUM ON GASTROINTESTINAL INFLAMMATION AND CANCER: FROM ETIOLOGY TO THERAPY

Organized by the Beijing Digestive Center at the Capital Medical University, the Chinese Association of Gasteroenterologists and Hepatologists, and the IUPHAR Gastrointestinal Pharmacology Section

Dr. C. H. Cho, President of the IUPHAR Gastrointestinal Pharmacology Section, welcomed the conference participants

The International Symposium on Gastrointestinal Inflammation and Cancer: From Etiology to Therapy was held in Bejing from September 26-28, 2008 immediately following the Olympic Games. The meeting was organized by the Beijing Digestive Center at the Capital Medical University, the IUPHAR Gastrointestinal Pharmacology Section, and the Chinese Association of Gastroenterologists and Hepatologists. This symposium also served as a part of the annual training course for gastroenterologists and hematologists in Beijing. The topics covered ranged from functional disorders to inflammation and cancers of the gastrointestinal tract.

There were over 200 participants from 10 different countries and regions, including Asia (China, Hong Kong, Korea, Japan and Taiwan), Europe (Croatia, Finland and Norway) and North America (Canada and USA). IUPHAR provided US$4,300 to support the participation of young basic scientists and clinicians. The content and format, which included group discussions and questions from the audience, fostered an in-depth examination of the subject. As with the 2006 IUPHAR meeting in Beijing, the success of this symposium illustrates the value of China as a venue for scientific gatherings. ●

C. H. Cho, President, IUPHAR Gastrointestinal Pharmacology Section

The meeting participants explored Beijing after the Olympics.

MEETING REPORT

The São Paulo Research Conference on Molecular Medicine and Pharmacogenetics

A Joint Meeting of the IUPHAR Subcommittee on Pharmacogenetics and the Brazilian Pharmacogenetics Network in Collaboration with the University of São Paulo

Pharmacogenetics/-genomics (PGx) was the major topic of the XIth São Paulo Research Conference (SPRC). The meeting was held in São Paulo, Brazil September 18-20, 2008. It was sponsored jointly by the IUPHAR Subcommittee on Pharmacogenetics and the Brazilian Pharmacogenetics Network (Refargen), in collaboration with the University of São Paulo. The conference, which was chaired by Boris Vargaftig (University of São Paulo), attracted nearly 450 participants, the majority of whom were from Brazil. The scientific program included plenary sessions on topics of general interest and featured a keynote lecture by Oliver Smithies, 2007 Nobel Laureate in Physiology and Medicine. Parallel sessions were held with emphasis on PGx and molecular medicine.

The PGx portion of the program included a keynote lecture, four symposia, poster exhibits, an oral communication session and a meeting of the IUPHAR Subcommittee of Pharmacogenetics. This session was launched by an excellent keynote lecture entitled “Clinical Aspects of Pharmacogenetics: Promises and Future” delivered by Matthias Schwab, Professor and Chair of Clinical Pharmacology, University of Tuebingen, and head of the Margarete Fischer-Bosch Institute of Clinical Pharmacology in Stuttgart, Germany. Professor Schwab outlined the limited efficacy of major pharmaceuticals and discussed how PGx-guided decisions could improve response rates.

The first symposium, “Pharmacogenetics in Clinical Practice”, dealt with the impact of PGx on the treatment of cardiovascular diseases and on the genetic background of adverse drug events associated with HIV treatment. Talks were presented by Heyo K. Kroemer (Institute of Pharmacology, University of Greifswald, Germany) on the pharmacogenomics of statin transport and action; José Eduardo Krieger (University of São Paulo, Brazil) on the impact of pharmacogenetics in the treatment of cardiovascular diseases; Ann Daly (University of Newcastle, United Kingdom) on pharmacogenetics of oral anticoagulation; and Vanessa S. Mattevi (UFRS, Porto Allegre, Brazil) on genetic markers associated with highly active antiretroviral therapy (HAART) adverse effects in HIV-infected patients.

The second symposium dealt with pharmacogenetics in special populations. The peculiarities of pharmacogenetics in pediatric patients were discussed

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SÃO PAULO MEETING REPORT (CONTINUED)

by J. Steven Leeder (Children's Mercy Hospitals and Clinics, Kansas City, USA). Population diversity in PGx, in particular as it relates to Native Americans, was discussed by Eduardo Tarazona-Santos (Federal University of Minas Gerais, Belo Horizonte, Brazil), with Adrian Llerena (University of Extremadura, Badajoz, Spain) presenting an overview of pharmacogenomics in Hispanic populations.

The third symposium was devoted to pharmacogenetics in clinical practice. The pharmacogenomics of opioids was discussed by Andrew Somogyi (University of Adelaide, Adelaide, Australia), while Ingolf Cascorbi (University of Kiel, Kiel, Germany) gave a presentation on the pharmacogenetics of chronic pain treatment, and Professor Schwab discussed pharmacogenetics in cancer.

The fourth symposium focused on pharmacogenetics of drug disposition, with additional consideration of the ethical aspects of ethnicity and genetic diversity. An overview of the pharmacogenetics of cytochrome P450 enzymes was given by Magnus Ingelman-Sundberg (Karolinska Institutet, Stockholm, Sweden). The pharmacogenomics of ATP-Binding Cassette (ABC) transporters was reviewed by Deanne Kroetz (University of California-San Francisco, USA), and race as a variable in pharmacogenomics science was discussed by Vural Ozdemir (University of Montreal, Montreal, Canada). Finally, Guilherme Suarez-Kurtz (National Cancer Institute, Rio de Janeiro, Brazil) presented an overview of pharmacogenetics in mixed populations.

Time was devoted to brief oral communications to provide PhD students with the opportunity to discuss their research projects. Those selected to make these presentations were Alice C. Rodrigues, Jamila A. Perini, Vinicius A. Sortica and Mariana S. Silva. SPRC awarded prizes for best posters to J.A. Perini, et al. and E.F. Costalonga et al.

The IUPHAR Subcommittee on Pharmacogenetics met during the last day of the conference. The group agreed unanimously that the conference format provided a valuable model for future educational initiatives directed at increasing the global awareness of the role of PGx in personalized drug therapy. Overall, the conference had a significant impact on promoting PGx research in Brazil. ●

Ingolf Cascorbi and Guilherme Suarez-Kurtz
on behalf of the
IUPHAR Subcommittee of Pharmacogenetics
and the Brazilian Pharmacogenetics Network

(L→R) Adrian Llerana, Steven Leeder, Matthias Schwab, Andrew Somogyi, Vanessa Mattevi, Ingolf Cascorbi, Deanne Kroetz, Magnus Ingelman-Sundberg, Vural Özdemir, Ann Daly, Guilherme Suarez-Kurtz and Heyo Kroemer

European Association for Clinical Pharmacology and Therapeutics

Ninth Biennial Conference
Edinburgh, 12 - 15 July, 2009

We are delighted to announce that the European Association for Clinical Pharmacology and Therapeutics (EACPT) will hold its 9th biennial international congress in Edinburgh in 2009. This will be the first time the event has been held in the UK. The EACPT 2009 meeting will run from Sunday, July 12th to Wednesday, July 15th, 2009 inclusive, and follows the tradition of the very successful 2007 meeting in Amsterdam.

The Congress will focus primarily on translational medicine, with themes related to drug discovery, drug development and drug safety, and the therapeutics of organ-based diseases. There will also be symposia related to pharmaco-economics, pharmaco-genetics, pharmaco-vigilance, and education for safe prescribing, as well as debates on some of the current hot topics in clinical pharmacology.

Plenary lectures will be given by Sir Colin Dollery (UK), Garret Fitzgerald (US), Patrick Vallance (UK) and Alastair Wood (US), and the meeting will incorporate a large number of keynote presentations from acknowledged experts in their respective fields. The meeting will also be supported by a number of satellite symposia highlighting major new developments in the field. We anticipate a lively and informative meeting comprising strong scientific and educational programmes.

The local organisation is based at the University of Edinburgh, which has a distinguished history of pharmacology, clinical pharmacology and therapeutics. We are supported by a national organising committee and the EACPT advisory board. We are also delighted to have the backing of the British Pharmacological Society, which has given strong support to the meeting.

Edinburgh is Scotland's capital city and a major tourist destination. The award-winning Edinburgh International Conference Centre (EICC), situated in the heart of the city, offers state-of-the-art facilities and will provide a perfect venue for the Congress. Edinburgh is large enough to be able to provide all the facilities international delegates would expect, but small and friendly enough to be explored thoroughly on foot.

The Old Town of Edinburgh was developed from the 11th century, originally within defensive walls, around the rock on which Edinburgh Castle is situated. From here, the historic Royal Mile sweeps down to the Palace of Holyrood House, the Queen's official royal residence in Scotland. The Castle provides a spectacular backdrop to the busy shop-filled streets, in particular Princes Street and George Street. Edinburgh is also famous for its New Town, which is a model of 18th century town planning with its magnificent Georgian Terraces. Along with the Old Town, it comprises a UNESCO World Heritage Site.

There are a wealth of hotel accommodations in Edinburgh, ranging from 5 star luxury and exclusive boutique hotels to smaller traditional accommodations full of Scottish character. In addition, there are many fine restaurants around the city, which draw on the rich produce of the Scottish countryside. An exciting and memorable social programme and accompanying guests' programme will be arranged throughout the Congress. Scotland is also the home of golf, including the famous championship links of Muirfield, St. Andrews and Turnberry (which will host the Golf Open in the week immediately following our Congress).

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EACPT

Congress of the European Association for Clinical Pharmacology and Therapeutics
Edinburgh, Scotland 12-15th July 2009

The Edinburgh International Conference Centre (EICC), Scotland

Organisers: Dr Simon Maxwell, Dr Stephen Waring and Professor David Webb

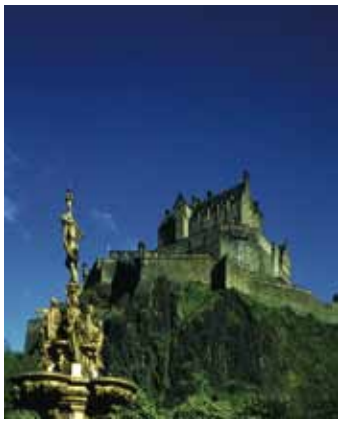
Themes:

Translational Medicine

Drug Discovery, Development and Safety

New Treatments for Common Diseases

Therapeutics in Special Groups



Confirmed Speakers Include:

Hans Georg-Eichler (Aus)
Theodor Guentert (Ch)
Ingolf Cascorbi (D)
Matthias Schwab (D)
Arne Astrup (DK)
Soren Sindrup (DK)
Julio Benitez (E)

Keynotes:
Sir Colin Dollery
Patrick Vallance
Garret Fitzgerald
Alastair Wood

Stephane Laurent (F)
Nicholas Moore (F)
Emilio Perucca (I)
Adam Cohen (NL)
Theo de Vries (NL)
Sir Alasdair Breckenridge (UK)
Sir Michael Rawlins (UK)

Register Interest at: www.eacpt2009.org

Scotland, especially the Highlands, offers some of the most spectacular scenery in the world. So, to relax before or after the Congress, maybe you should consider holidaying in Scotland? Travel to Edinburgh is now very easy with air, rail and road links to all of the major cities in the UK, and many cities within Europe and beyond.

Please put the Congress dates of July 12 - 15, 2009 in your diary. Please also go to the website (www.eacpt2009.org) to record your interest and obtain further information on registration and abstract submission. *Registration and abstract submission are now open*. We look forward to seeing you in Edinburgh next summer! ●

David Webb (President) and Simon Maxwell (Chair)
on behalf of the Organising Committee

16th World Congress of Basic and Clinical Pharmacology
Copenhagen, Denmark, 17–23 July 2010

WorldPharma2010
17-23 July 2010

18
Focused Conferences – one World Congress

Abstract deadline 15 January 2010
Early bird registration deadline 15 March 2010

Congress Secretariat: WorldPharma2010@ics.dk

ICS A/S Copenhagen
Strandvejen 169-171 - P.O. Box 41 - DK-2900 Hellerup, Copenhagen - Denmark

Telephone: +45 7023 7823 - Fax: +45 7023 7888

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IUPHAR | 16th World Congress of Basic and Clinical Pharmacology
Copenhagen, Denmark, 17–23 July 2010

WorldPharma 2010
17-23 July Copenhagen
Bridging Basic and Clinical Pharmacology

Danish Society of Pharmacology and Toxicology

Danish Society of Clinical Pharmacology

INVITATION

In 2010, a major event will occur for pharmacology. Basic and clinical pharmacology, kept separate for too long, have come together again to encompass the whole process of drug development from molecular biology to clinical practice. The remarriage is to be celebrated in Copenhagen at this 16th World Congress of Basic and Clinical Pharmacology, WorldPharma 2010. Here the World's basic and clinical pharmacologists and all those dealing with the development and use of drugs will meet to discuss how we can work together to meet the need for safe and effective medicines at affordable prices.

WorldPharma 2010 will be based on 18 high-quality internationally focused conferences each lasting 2-3 days, and each having a content which will in itself make it worth the trip to Copenhagen. Together, the 18 conferences will provide a galaxy of basic and clinical pharmacology expertise. The titles of the conferences are shown on pages 26 and 27.

WorldPharma 2010 will thus provide in depth treatment of the hottest topics in basic and clinical pharmacology, while at the same time offering the broad perspective of how drugs affect the living organism, the foundation of our field.

In planning the program, particular attention is directed toward attracting young investigators and investigators from developing countries.

Make a note in your diary that the world's pharmacologists will all be meeting in Denmark 17– 23 July 2010. Don't miss out on WorldPharma 2010! We promise you a scientifically excellent programme as well as the opportunity to savour the atmosphere of Copenhagen.

Kim Brøsen
President

Michael Mulvany
Secretary General

Kim Brøsen
President

Michael Mulvany
Secretary General

WorldPharma 2010 is organised by:

Danish Society of Pharmacology

DSKF Danish Society of Clinical Pharmacology

Jointly with

BPS BRITISH PHARMACOLOGICAL SOCIETY
Today's science, tomorrow's medicines

For up-to-date information visit the homepage
www.worldpharma2010.org/

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Continued from page 25...

Focused Conferences

(visit http://www.worldpharma2010.org/scientificprogramme.php for more information)

Conference title	Conference leaders
Clinical pharmacology in the emerging countries	Lembit Rago, World Health Organization, Geneva, Switzerland
Transmembrane transport: perspectives for disease and drug discovery	Randy Blakely, Vanderbilt University Medical Center, USA Richard B. Kim, University of Western Ontario, Canada
Maximising benefit and minimizing harm from drugs	Munir Pirmohamed, University of Liverpool, UK Kevin Park, University of Liverpool, UK Ingolf Cascorbi, University of Kiel, Germany
G protein-coupled 7TM receptors: from molecular to physiological function	Brian K. Kobilka, Stanford University, USA Jean-Philippe Pin, University of Montpellier, France
Pharmacoepidemiology: current controversies and opportunities	Jesper Hallas, University of Southern Denmark Bert Leufkens, Professor, University of Utrecht, The Netherlands
Addiction and doping: Neurobiological and clinical basis of emerging treatments	Markus Heilig, National Institute on Alcohol Abuse and Alcoholism, NIH, USA Yavin Shaham, National Institute on Drug Abuse, NIH, USA
Translational science in the metabolic syndrome: Basic and clinical pharmacological aspects	Leif Groop, Malmoe University, Sweden Henning Beck-Nielsen, Odense, Denmark Jan-Erik Henriksen, Odense University Hospital, Denmark
New approaches and targets in psychiatry	David Nutt, Bristol University, UK Birte Glenthøj, University of Copenhagen, Denmark
Natural Products and Systems Biology: Past and future?	Ricky Man, University of Hong Kong, China Tai-Ping Fan, University of Cambridge, UK Paul Vanhoutte, University of Hong Kong, China Zhi-Bin Lin, Peking University, China
Drugs for half the World: Paediatric clinical pharmacology	John N. van den Anker, Children's National Medical Center, Washington DC, USA and Rotterdam, The Netherlands

Continued on page 27...

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Focused Conferences (continued)

(visit http://www.worldpharma2010.org/scientificprogramme.php for more information)

Conference title	Conference leaders
Endothelium in health and disease	Arthur Weston, University of Manchester, UK Chris Garland, University of Oxford, UK
Developments in the treatment of sexual dysfunction and diseases of the lower urinary tract	François Giuliano, Garches, France Karl-Erik Andersson, Winston-Salem, USA
New nuclear receptor targets for specific treatment of disease	Vincent Laudet, University of Lyon, France
Simulation and data modelling in drug development: Better drugs faster?	Hartmut Derendorf, University of Florida, USA
Ion channels in analgesia and anaesthesia	Nick Franks, Imperial College of London, UK Clifford Wolf, Harvard University, USA
Ion channelopathies: New windows on complex diseases and therapy	William Catterall, University of Washington, USA Frances Ashcroft, University of Oxford, UK Bernard Rossier, University of Lausanne, Switzerland Ingrid Scheffler, Australia Richard Olsen, University of California - Los Angeles, USA
Challenges in modern gastrointestinal pharmacology: From functional disorders to neoplastic diseases 1-day conference	C.H. Cho, The Chinese University of Hong Kong, China D. Chen, University of Trondheim, Norway P. Andrews, St. George's Hospital of London, UK
Inflammation and immunopharmacology: New tools for old diseases	Eeva Moilanen, University of Tampere, Finland Ian Adcock, Imperial College of London, UK Frans Nijkamp, Utrecht, The Netherlands
The heart gone wrong: Stabilization of cardiac function	Michael Sanguinetti, University of Utah, USA, Lionel Opie, University of Cape Town, South Africa

Upcoming Events

January

International Conference of Oxidative Stress sponsored by the Cuban Society of Pharmacology
Where: Havana, Cuba
When: January 29 -31, 2009
Website: www.scf.sld.cu

February

Ion Channels as Therapeutic Targets: Joint meeting of the British Pharmacological Society and the Royal Society of Chemistry
Where: Horsham, UK
When: February 5 - 6, 2009
Website: www.bps.ac.uk/site/cms/contentCategoryView.asp?category=258

March

50th Annual Meeting of the German Society for Experimental and Clinical Pharmacology and Toxicology
Where: Mainz, Germany
When: March 10 - 12, 2009
Website: www.pharmakologie.uni-mainz.de/JTG/JTG.html

International Society of Pharmacovigilance Training Course in Ecopharmacovigilance
Where: Verona, Italy
When: March 26 - 27, 2009
Website: www.isoponline.org/training.html

April

Infectious Diseases: From Basic to Translational Research sponsored by the European Science Foundation and the International Council for Science
Where: Cape Town, South Africa
When: April 4 - 9, 2009
Website: www.esf.org/conferences/09277

French Society of Pharmacology and Therapeutics P2T: Congress of Physiology, Pharmacology and Therapeutics
Where: Marseille, France
When: April 15 - 17, 2009
Website: www.congres-p2t.fr

Experimental Biology '09, American Society for Pharmacology and Experimental Therapeutics
Where: New Orleans, Louisiana, USA
When: April 18 - 22, 2009
Website: www.aspet.org/public/meetings/meetings.html#future_eb_meetings

3rd Focused Meeting: Cell Signalling, sponsored by the British Pharmacological Society
Where: Leicester, UK
When: April 20 - 21, 2009
Website: www.bps.ac.uk/site/cms/contentCategoryView.asp?category=258

Continued on page 29...

Continued from page 28...

Upcoming Events

April (continued from prior page)

10th European College of Neuropsychopharmacology Regional Meeting
Where: Tallinn, Estonia
When: April 23 - 25, 2009
Website: www.ecnp.eu/emc.asp?pageId=607

May

Focused Meeting: New Drugs in Cardiovascular Research, a joint meeting of the British Pharmacological Society and the German Societies for Pharmacology and Clinical Pharmacology
Where: Dresden, Germany
When: May 7 - 9, 2009
Website: www.bps.ac.uk/site/cms/contentCategoryView.asp?category=258

Innovations in Pharmacology, sponsored by the Canadian Society of Pharmacology and Therapeutics
Where: Saskatoon, Canada
When: May 30 - June 2, 2009
Website: www.PharmacologyCanada.org

June

10th International Symposium on Mechanisms of Vasodilation
Where: Matsushima, Miyagi, Japan
When: June 1 - 3, 2009
Website: www2.convention.co.jp/movd2009

July

Summer Meeting of the British Pharmacological Society
Where: Edinburgh, Scotland, UK
When: July 8 - 10, 2009
Website: www.bps.ac.uk/site/cms/contentCategoryView.asp?category=258

The Congress of the European Association for Clinical Pharmacology & Therapeutics (EACPT)
Where: Edinburgh, Scotland, UK
When: July 12 - 15, 2009
Website: www.eacpt2009.org

36th International Congress of the International Union of Physiological Sciences Joint IUPHAR-IUPS Symposium: Cotransmission and Presynaptic Receptors
Where: Kyoto, Japan
When: July 27 - August 1, 2009
Website: www.iups2009.com

To include your events here, please e-mail the details to iuphar@kumc.edu .

International Research Funding Opportunity

REQUEST FOR APPLICATIONS ISSUED BY:

THE MICHAEL J. FOX FOUNDATION FOR PARKINSON'S RESEARCH

Novel Approaches to Drug Discovery for Parkinson's Disease

Made possible by generous leadership funding from Elan Pharmaceuticals, Inc.

MJFF wishes to promote collaborations that can accelerate development of new treatments for PD. With this Request for Applications ("RFA"), MJFF is providing interested investigators a unique potential opportunity for collaborating with Elan to develop disease-modifying therapies for PD. MJFF will commit a minimum of US$1,500,000 to this initiative.

Proposals will focus on efforts to convert and further develop promising biological targets into novel disease modifying therapeutic strategies. Ideal activities include (but are not limited to):

- Identification of therapeutically relevant strategies to modulate biological targets with clear rationale for altering PD pathogenesis.
- Preclinical evaluation and optimization of promising therapeutic strategies, including chemical optimization, *in vivo* biology, pharmacology, toxicology and formulation chemistry.
- Proof-of-concept testing of therapeutic strategies in relevant whole-animal, mammalian models of PD.

Please note that proposals focusing solely on novel target discovery, new animal model generation or mechanistic studies of PD biology are not appropriate for this RFA. Post-doctoral students or fellows are not eligible to apply as principal investigators.

Pre-proposals must be submitted via the on-line system by February 10, 2009.

For additional information and requirements, please visit

http://www.michaeljfox.org/research_openFundingPrograms_program.cfm?ID=24

Pharmacology International

Published June and December

Clockwise beginning in lower left: Drs. Mohamed Khayyal, Petra Thürmann, Sérgio Ferreira, Zhi-Bin Lin, David Webb, Sue Duckles, S. J. Enna, Paul Vanhoutte, Salomon Langer, Kim Brøsen, Gabrielle Hawskworth, Masayoshi Mishina, Donald Birkett, Urs Ruegg, and Patrick du Souich

Published by

IUPHAR Administrative Office
University of Kansas Medical Center
3901 Rainbow Blvd., Mail Stop 4016
Kansas City, Kansas 66160 USA
Tel: +1.913.588.7533
Fax: +1.913.588.7373
iuphar@kumc.edu
www.iuphar.org

Dr. Enna's office L→R: Lynn LeCount, Leigh Ann Arbuckle, Cindy Martin and S. J. Enna

Contributions:

We welcome contributions from member societies, divisions, and sections. Please submit articles and photographs to iuphar@kumc.edu .

Membership:

The members of IUPHAR are national, international, and special research interest societies. If you are an individual, please visit www.iuphar.org for additional information on the societies you may be interested in joining.

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