

# Pharmacology International

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## IUPHAR in the 21st Century: New Frontiers

Those who were fortunate enough to attend the 15<sup>th</sup> World Congress of Pharmacology in Beijing this last summer will recognize this title as an adaptation of the congress theme: "Pharmacology in the 21<sup>st</sup> Century: A Bridge Between the Past and New Molecular Frontiers". In many respects the World Congress was an inspiration to those involved in IUPHAR, as it reminded us once again of the importance of our organization to the strength of the discipline of Pharmacology all over the world.

We have all heard about the development that is sweeping China, especially in big cities such as Shanghai and Beijing. Indeed, these cities are impressive, with beautiful new buildings, many of architectural distinction, extensive industrial parks and enticing recreational and educational facilities. But, what we couldn't have expected was the glorious hospitality, especially from the young students who gave so generously of their time and efforts to

welcome us. Wherever you turned in the Convention Center, an eager student wearing a bright yellow shirt was there to direct you or solve any problem you might have. It is the young people entering the discipline of Pharmacology, with their enthusiasm and promise, that IUPHAR must always consider. As an international organization, we are strategically positioned to facilitate access to the latest Pharmacological knowledge, and this should continue to be one of our major goals.

For me, the most lasting image of the World Congress will be the cadre of students, dressed in their bright yellow t-shirts and jeans, serenading the audience at both the Opening and Closing Ceremonies.

They clearly had made a careful selection of welcoming songs in English and Chinese and had practiced hard. I felt particularly privileged to be asked to join them at the end and will never forget the bright smiles and joy we all felt being together and celebrating

*Continued on page 2...*

**It is the young people entering the discipline of Pharmacology, with their enthusiasm and promise, that IUPHAR must always consider.**

## Beijing, China July 2-7, 2006



Pharmacology. Special thanks once again to the Chinese Pharmacology Society, Lin Zhi-Bin and his dedicated organizing committee, and every single person who worked so hard to make this 15<sup>th</sup> World Congress a success.

The “old” and “new” IUPHAR executive committees both met in Beijing, to wrap up old business and launch activities for the next four years. The IUPHAR officers, myself, Sam Enna and Urs Ruegg, have been busy communicating by e-mail and monthly conference calls and met together in November at the NC-IUPHAR meeting in Paris. I am delighted to report that, once again, a strong team of committed individuals has been assembled. Several key goals for the next four years have been established:

1. Develop a stronger financial footing for IUPHAR
2. Continue to interact with the IUPHAR Nomenclature Committee to move forward in a strategic manner with new initiatives
3. Increase the emphasis on integrating basic and clinical pharmacology by working closely with the Clinical Pharmacology Division and other IUPHAR sections
4. Facilitate planning for the 16<sup>th</sup> World Congress in Copenhagen, the first World Congress to integrate basic and clinical pharmacology
5. Initiate new programs to enhance access worldwide to Pharmacological knowledge, such as information concerning integrative pharmacological techniques

In summary, together with the other IUPHAR officers and members of the Executive Committee, we embark on another four years of IUPHAR activities with great optimism. The merging of basic and clinical Pharmacology greatly strengthens our society, especially as we hear more about the importance of “translational” science. Key IUPHAR initiatives, such as the NC-IUPHAR receptor database, continue to develop, and our sections contribute important knowledge as reflected in outstanding meetings this summer. We hope you will use our website, IUPHAR.org, as a portal for learning about international activities in Pharmacology, and continue to read *Pharmacology International* for information about IUPHAR activities. We welcome your comments and input. ●

Sue Duckles  
President, IUPHAR



*ASPET Past President Jim Barrett presenting a congratulatory plaque to Graeme Henderson, President of the British Pharmacology Society at the reception celebrating its 75th anniversary.*



*The Chinese National Committee for IUPHAR 2006, L→R: Yong-Xiang Zhang, Zhi-Bin Lin, Gan-zhong Liu, Jun-Tian Zhang, Xuejun Li, Guan-Hua Du, and Bao-Shan Ku.*



*Xuejun Li and her fellow members of the Chinese Pharmacological Society hosted a lovely dinner performance to share the local traditions.*

## The 15<sup>th</sup> World Congress of Pharmacology

The 15<sup>th</sup> World Congress of Pharmacology was held in Beijing, China, on July 2-7, 2006. The congress was attended by over 2000 scientists from around the world. The 265 registrants from the U.S. included seven James A. Bain Young Scientist Travel Award winners and 10 graduate student travel award winners from ASPET, in addition to ASPET's 10 official delegates to the IUPHAR General Assembly. Elaine-Sanders Bush, Richard Weinshilboum, and Lorraine Gudas, gave plenary lectures, and Terry Kenakin presented the IUPHAR Lecture in Analytical Pharmacology. While not without some logistical problems, particularly with the online registration system, the Congress overall ran very smoothly. In large part, this was due to the host of pharmacology graduate student volunteers who handled onsite registration, audiovisual assistance, and any other tasks that needed attention. You could recognize these cheerful helpful volunteers by their yellow sports shirts with the green congress logo.

The Program consisted of 23 plenary lectures and symposia with 264 invited speakers from around the world. Program topics covered the range from molecular through clinical pharmacology and from the pharmacology of traditional medicines to gene- and cell-based therapies for disease. Many of the topics are ones of critical interest to scientists worldwide but are not traditionally covered at domestic U.S. meetings (e.g. malaria therapy, traditional medicine, chronopharmacology). There were several sessions focusing on regulatory issues, as well as on education.



The Opening Ceremony featured welcoming remarks not only by the Congress President, Professor Lin Zhi Bin, and IUPHAR President, Paul Vanhoutte, but also by the Vice-Mayor of Beijing and the head of the science and technology ministry. Following these remarks, a performance featured several different cultural activities of Beijing, including the Beijing opera, musicians, a Kung Fu demonstration

and acrobatics. The student volunteers, wearing their signature yellow shirts and Levis, sang two songs that they had rehearsed specifically for this event. The Opening Ceremony was followed by a reception and buffet held outdoors and featuring many traditional Chinese dishes.



L→R: Brian Cox, Suzanne Bausch, Elaine Sanders-Bush and David and Elaine Bylund at reception buffet.

Other social highlights of the meeting included a reception celebrating the 75<sup>th</sup> anniversary of the British Pharmacological Society at which ASPET presented the BPS with a plaque honoring their birthday, a Peking Duck dinner following an evening tour of Ti'anmen Square, and the closing banquet at a traditional Chinese family restaurant.

The IUPHAR General Assembly ratified its earlier electronic vote to change the name of the union to the International Union of Basic and Clinical Pharmacology, although the acronym (IUPHAR) will remain unchanged. South Africa was selected as the site of the 2014 WorldPharma Congress. ASPET member Sue P. Duckles, the current IUPHAR Secretary-General, was elected to a four year term as president, succeeding Paul M. Vanhoutte. ASPET member Sam Enna was elected to a four-year term as IUPHAR Secretary-General.

At the closing ceremony, IUPHAR presented several awards to young scientists. (*Editor's note, see page 5 for details.*) There were presentations from the sponsors of CPT 2008 in Quebec City, July 27-August 1, and from the sponsors of WorldPharma 2010 in Copenhagen, July 17-23. The Congress aptly closed with the student volunteers singing *Auld Lang Syne*. •

Christie Carrico  
Executive Officer, ASPET

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## The Beautiful Yellow Shirts Volunteers at IUPHAR 2006

The 15<sup>th</sup> World Congress of Pharmacology was successfully held in Beijing, China from July 2nd to 7th, 2006. It was a great event for Chinese and International Pharmacologists. As volunteers in this congress, we are proud of our experience there. As young postgraduates majoring in pharmacology, we signed up as volunteers along with our classmates as soon as we heard the recruitment notice. In the training organized by Chinese Pharmacological Society (CNPHAR), President Zhi-bin Lin gave us a warm speech and encouraged us to work boldly. Professor Yong-xiang Zhang, the Vice Secretary-General, gave us a lesson about the congress and our job. He shared a proverb with us, “A bit of perfume always clings to the hand that gives the rose”, from which we realized the benefit of volunteering.

Arranged by Dr. Sheng Yang, an enthusiastic leader, all eighty-six volunteers were divided into various work groups in charge of different jobs, such as airport reception, information consultation, report files collection, poster assistance, projector and internet service. As messengers of the congress, we learned a great deal about the background of the congress and Beijing, in general, in order to help foreign delegates enjoy their

stay in Beijing. Uniformed in yellow T-shirts among the delegates, we were eye-catching and sunny. The sight of the yellow shirts brightening the congress hall was beautiful.

We also rehearsed a chorus and gave a wonderful performance for the delegates. At the opening ceremony, we sang a Chinese national folk song called *The Dance of Youth*. It left a favorable impression on the delegates by showing them the vitality of the Chinese youth and extending our warm welcome. At the end of the closing ceremony, a famous song called *Auld Lang Syne*, performed by the volunteers hand in hand, struck a sympathetic chord with the delegates. Many people complimented us on our service and kindly called us “yellow shirts” – such a nice nickname, we like it.

Although the congress lasted for only a few days, a bond of friendship formed between many of the volunteers and guests. We hope the sincere smiles, outstanding service and friendly actions of the volunteers will be always remembered by the delegates as a highlight of the congress. ●

Sheng Yang and Jia Su  
Yellow Shirts  
Chinese Pharmacological Society

## **Young Investigator Awards**

*Gold:* **Rebecca Roof, University of Michigan, USA**

*Silver:* **Zhou Peng, Peking University, PR China**

*Bronze:* **Gregor Purves, University of Manchester, UK**

## **Young Investigator and Poster Awards**

### **for the Drug Treatment for AIDS and AIDS Associated Diseases**

*Travel Award:*

**Jessica Gardner, University of Nebraska Medical Center, USA**

“TIMP-1 promoter regulation in astrocyte during chronic neuroinflammation”

*Poster awards:*

**Mi-Feng Liu, Beijing Institute of Pharmacology & Toxicology, PR China**

“Early toxicity screening on 3, 4-Di-O(-)-camphanoyl-(t)-cis-khellactone serial compounds”

**Zidek Zdenek, Czech Academy of Sciences, Czech Republic**

“Antiviral with immunostimulatory properties: Acyclic nucleoside phosphonates”

**Nathan Erdmann, University of Nebraska Medical Center, USA**

“Glutaminase mediated glutamate neurotoxicity by HIV-1 infected macrophage”

We wish to acknowledge and thank the sponsor and judges:

Sponsor: NIH Office of AIDS Research

Judges: Drs. Wei Wei, PR China, and Howard Gendelman, USA

## **Natural Product Poster Awards**

*First Prize:*

**Yan-Chun Xu, University of Hong Kong, Hong Kong**

“Kaempferol, a compound from Chinese medicine, potentiated relaxation in porcine coronary arteries via cAMP pathway and activation of potassium channel”

*Second Prizes:*

**Sang-Hyun Kim, Kyungpook National University Medical School, Korea**

“Mast cell mediated histamine release and pro-inflammatory cytokine production are attenuated by gallic acid”

**Noriko Yoshikawa, Mukogawa Women’s University, Japan**

“Cordycepin, an active ingredient of Cordyceps sinensis, inhibits tumor growth by stimulating adenosine A3 receptor”

*Third Prizes:*

**Lei Zhu, Anhui Medical University, PR China**

“The modulation of G protein-coupled receptor kinases 2 on synoviocyte function and the effects of total glucosides of paeony”

**Selen Isbir-Soylemez, Gazi University, Turkey**

“Resveratrol inhibits contractions to angiotensin II in rat aorta”

**Ning Jiang, Beijing Institute of Pharmacology and Toxicology, PR China**

“Comparative proteomics analysis on the mechanisms of action of liuwei and bawei dihuang decoctions”

We wish to acknowledge and thank the sponsor and judges:

Sponsor: Arne Langaskens, President of ChinTao Life Science Foundation

Judges: Drs. David Story, Australia, Arnold Herman, Belgium, Kelcin Chan, UK, Youngxiang Zhang, PR China, and Ricky Man, Hong Kong

## 2006: An Exceptional Year for International Paediatric Clinical Pharmacology

The year soon to end has witnessed exceptional international activity related to children's medicines and paediatric clinical pharmacology.

On March 6, 2006, a group of paediatric clinical pharmacologists, paediatric pharmacists and paediatricians from different parts of the world assembled in Baltimore for the NICHD Global Consortium on Paediatric Pharmacology Meeting to discuss international collaboration. The issues of exchange and cooperation between scientists working in the developed world and measures to promote paediatric pharmacology in the developing world were high priorities on the agenda.

The Biannual Congress of ESDP (European Society for Developmental Perinatal & Paediatric Pharmacology) was held June 14-17, 2006 in Stockholm, Sweden. At the end of this very successful scientific congress, a special 'Plenary dialog about Global Paediatric Pharmacology' was held in commemoration of Lars Boréus, one of the pioneers of paediatric clinical pharmacology and President of ESDP 1990-1992.

Preceding the 15th World Congress of Pharmacology, a Satellite Symposium 'International Challenges in Paediatric Pharmacology' was organized for June 28 – 30, 2006 in Shanghai, China. The symposium was followed by an IPA (International Paediatric Association)/IUPHAR workshop 'Essential Medicines For Children' on July 1, 2006 in Shanghai. This gathering of paediatricians, clinical pharmacologists and pharmacists from all over the world, with representatives of the IPA and the Paediatric Subcommittee of the IUPHAR Clinical Pharmacology Division, made a decision to found an International Alliance for Better Medicines for Children.



*The participants of the IPA/IUPHAR workshop 'Essential Medicines For Children' in Shanghai on July 1, 2006. First row, first from left is Hidefumi Nakamura, Tokyo, Japan (Member of the IUPHAR Paediatric Subcommittee), first row, fourth from left is Madlen Gazarian, Sydney, Australia (Member of the IUPHAR Paediatric Subcommittee) to the right from her in the first row are Stuart MacLeod, Vancouver Canada (Chairman of the meeting), Kalle Hoppu, Helsinki, Finland (Chairman of the IUPHAR Paediatric Subcommittee) and Jane Schaller, Vancouver Canada (Executive director of IPA, International Pediatric Association), in the second row above Jane Schaller is Gregory Kearns, Kansas City, USA (Member of the IUPHAR Paediatric Subcommittee).*

The program of the 15th IUPHAR World Congress of Pharmacology held July 2-7, 2006 in Beijing China, included a symposium 'Better Medicines for Children', organized by the Paediatric Subcommittee of the IUPHAR Clinical Pharmacology Division, to present the current active developments in this field to the international pharmacological community.

A Joint WHO and UNICEF meeting called 'Consultation on Paediatric Essential Medicines' convened in Geneva on August 9-10, 2006. The meeting marked an important activation of interest of the WHO in children's medicines. The chairman of the Paediatric Subcommittee attended the meeting representing the IUPHAR Clinical Pharmacology Division.

The outlook for 2007 regarding children's medicines and international paediatric pharmacology seems at least as exciting. Although there will not be as many international scientific meetings in paediatric pharmacology as were held in 2006, the year will mark the entrance of the new European Union Paediatric Regulation and hopefully the renewal of the paediatric legislations in the USA which have a sunset provision in 2007. The Paediatric Subcommittee of the IUPHAR Clinical Pharmacology Division will continue to be actively involved in the developments. •

Kalle Hoppu  
Chair, IUPHAR Paediatric Subcommittee

## THE IUPHAR SUBCOMMITTEE IN PAEDIATRIC CLINICAL PHARMACOLOGY 2004-2008:

Kalle Hoppu (chair)  
Helsinki, Finland

Gabriel Anabwani  
Gaborone, Botswana

Madlen Gazarian  
Sydney, Australia

Gregory L. Kearns  
Kansas City, USA

Hidefumi Nakamura  
Tokyo, Japan

### **Highlight: IUPHAR Division of Clinical Pharmacology Section on Pharmacogenetics**

#### **Aims and scopes**

Pharmacotherapy optimization through individual drug therapy is one of the major goals of clinical medicine. Over the last decades it has been clearly shown that genetics play a significant role in the pharmacokinetics of drugs and there is an increasing understanding of the genetic background among individuals and ethnic groups with regard to drug efficacy and response. Therefore, pharmacogenetics has developed into one of the most important subfields of clinical pharmacology.

The new subcommittee on pharmacogenetics, established in the summer of 2006, consists of a number of distinguished scientists from different continents. The subcommittee will hold annual meetings to:

1. Promote exchange of pharmacogenetic knowledge by organization of symposia and workshops in the field of pharmacogenetics and –genomics
2. Evaluate the clinical impact of pharmacogenetics
3. Develop a drug-related pharmacogenetic database
4. Create a population based “biobank” to conduct translational research in clinical pharmacogenomics

5. Establish international collaborative clinical studies to investigate the benefits of pharmacogenetics.

The subcommittee cooperates with the Pacific Rim organization on Clinical Pharmacogenetics (PRACP), a society associated with IUPHAR.

A satellite meeting on pharmacogenetics has been proposed for the CPT2008 congress in Quebec. •

Ingolf Cascorbi  
Chair, Pharmacogenetics Section

#### **Members**

Ingolf Cascorbi, Kiel, Germany (Chair)  
Laurent Bequemont, Paris, France  
Kim Brøsen, Odense, Denmark  
Ann Daly, Newcastle, UK  
Magnus Ingelman-Sundberg, Stockholm, Sweden  
Julia Kirchheiner, Ulm, Germany  
Vural Özdemir, Irvine, USA  
Mathias Schwab, Stuttgart, Germany  
Guilherme Suarez-Kurtz, Rio de Janeiro, Brazil  
Toshiyuki Someya, Niigata, Japan  
Andrew Somogyi, Adelaide, Australia  
Bryn Williams-Jones, Montreal, Canada

For more information visit  
[http://www.iuphar.org/clin\\_pharma.html](http://www.iuphar.org/clin_pharma.html)



## Progress of CPT2008 organization

We are approaching July 27th, 2008 and the National Organizing Committee for the IXth World Conference on Clinical Pharmacology and Therapeutics is actively, and successfully, pursuing a fundraising campaign and the allocation of exhibits.

The Scientific Program Committee has received 214 proposals coming from National Societies and individual clinical pharmacologists. These proposals have been rated and ranked. The program is almost complete and should be finalized by January 2007. The program, including nine plenary lectures and 36 symposia, will be distributed into four streams:

1. New therapeutic approaches, discussing topics like New anticancer drugs, New insights in the treatment of pain, TNF-alpha antagonists, Targeting protein kinase signalling, Use of cannabinoids, etc.
2. From fundamental to clinical pharmacology, presenting themes like Drug hypersensitivity, CNS drug metabolism and transporters, Clinical pharmacology based on genome science, Pharmacogenetics and clinical implications of serotonin receptors, Efficacy of herbal medicines, Pharmacogenetic epidemiology, etc.
3. Medicines and Society revising topics like Drugs in sport, Drugs for the new emerging diseases, Better medicines for children, Ethnical differences in drug therapy, etc.
4. Clinical pharmacology in special populations discussing topics like Advances in paediatric clinical pharmacology, Therapeutic implications of non-licensed and off-label use of antiepileptic drugs in children, Drugs in pregnancy and lactation, Orphan drugs and neglected diseases, Pharmacology aspects of HIV treatment, etc.

Each symposium will be 2.5 hours in duration including four or five speakers and time for general discussion. Several Satellite meetings are being organized around Québec City to discuss themes such as Education, Paediatric Clinical Pharmacology, Pharmacogenetics, Treatment of pain, etc.

The committee is also actively working at planning tours and social events. All the good restaurants, as well as good weather, are reserved and waiting for you! ●

Patrick du Souich

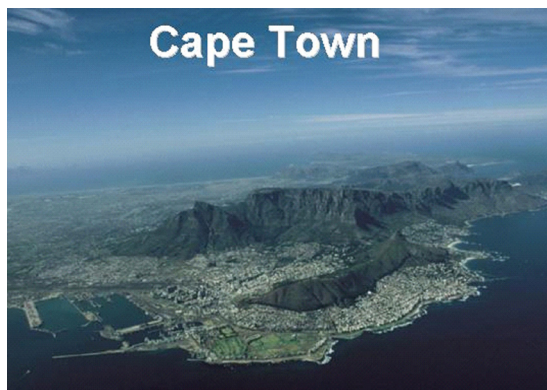
Chair, IUPHAR Division of Clinical Pharmacology

Please visit <http://www.cpt2008.com/> for more information.



# 17<sup>th</sup> IUPHAR World Congress of Basic and Clinical Pharmacology 2014 in Cape Town

The 17<sup>th</sup> IUPHAR World Congress of Basic and Clinical Pharmacology will be hosted in Cape Town, South Africa in July 2014. This five-day congress will be the second meeting of the basic and clinical pharmacology disciplines, following Copenhagen in 2010.



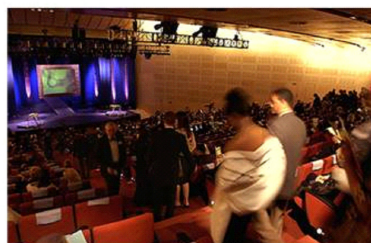
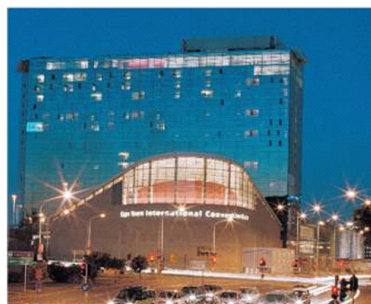
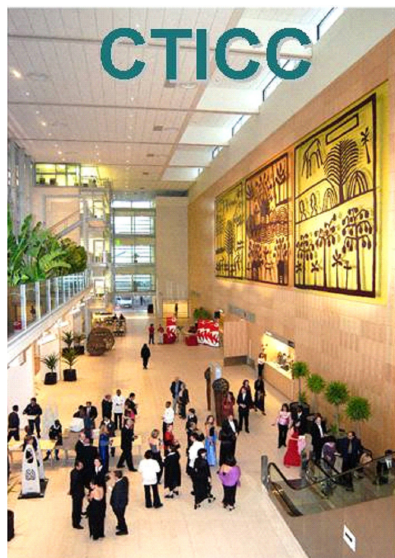
*Cape Town (South Africa), the hosting city of the 17th IUPHAR World Congress of Basic and Clinical Pharmacology in 2014. This world-renowned and modern harbor city is situated at the foot of the panoramic Table Mountain.*

Professor Douglas Oliver, President of the South African Pharmacology Society (SAPS), said that “this event will support the current growing awareness and initiatives of health sciences in Africa, and will be a major thrust and motivational force in promoting and stimulating pharmacology on the African continent in teaching, research, and to address the health care needs of the people through pharmacology”. Furthermore, the theme “Health Renaissance through Pharmacology” will serve both the African and international community. South Africa is indeed proud to host this first ever World Congress of IUPHAR on African soil. The ‘Pharmacology for Africa’ initiative and the launching of its Website (to be announced soon) is an exemplifying beacon of these exciting developments.

Not only is South Africa the “Gateway to Africa”, but Cape Town is the most beautiful modern peninsular city at the foot of the panoramic Table Mountain and along with its scenic coast lines. In fact, it is embedded in and surrounded by academic, cultural and natural beacons - a heartland for science and tourism. The Cape Town International Convention Centre where the congress will be held is ideally situated and technologically advanced. The congress, together with its pre- and post-satellites, promises to be a be a scientific success and experience of a lifetime! Keep an open space in your diary!

For further information, please contact the South African Pharmacology Society at [office@sapharmacol.co.za](mailto:office@sapharmacol.co.za) or visit [www.sapharmacol.co.za](http://www.sapharmacol.co.za) . ●

Christiaan Brink  
Secretary-General,  
South African  
Pharmacology Society



*The Cape Town International Convention Centre was the chosen venue for 2014.*

## First International Symposia about Pharmacology of Natural Products and Latino-American and Caribbean Bulletin of Aromatic and Medicinal Plants (FAPRONATURA 2006)

FAPRONATURA 2006, an event organized by the Cuban Society of Pharmacology, was held November 20-24, 2006 at Varadero Beach, Cuba.



*Dr. Gabino Garrido (left) and Dr. René Delgado (right) Presidents of Scientific and Organizing Committees, respectively.*



*The members of Scientific Committee, from left to right, Drs. Dagmar García, Gilberto Pardo, Idania Rodeiro and Odalys Blanco*

The Opening Ceremonies were performed by Prof. Michael Heinrich from London University, United Kingdom, who reported on ethnopharmacology and the search for novel medicines and health foods; Dr. Nancy Cabrera from the National Center for Natural and Traditional Medicine in Cuba, described the integration of Natural and Traditional Medicines into the Cuban national health system; Dr. Fulgencio D. Saura-Calixto from CSIC, Spain, spoke about the antioxidant dietary fibres as a potential tool for preventing the oxidative stress associated with disease; and Prof. Elizabeth M. Williamson from University of Reading, United Kingdom, presented a dissertation on the interactions between herbal medicines and prescription drugs.

FAPRONATURA 2006 was structured in mini-symposia:

1. Research & Development of Natural Products;
2. Pre-clinical Research in Natural Products;
3. Pharmacological Evaluation of Natural Products;
4. Caribbean Marine Biodiversity as a Source of New Compounds of Biomedical Interest and other Industrial Applications;
5. Propolis and its Therapeutic Properties;
6. *Mangifera indica* L stem Bark Extract (Vimang®): New Pharmacological Approaches;
7. Behavioral and Cognitive Effects of Nutraceuticals. Herbal Extracts in Humans;
8. Cardiovascular Action of Natural Products;
9. Anticancer Activity of Natural Products;
10. Clinical Trials in Natural Products; and
11. Safety, Interactions and Adverse Reactions of Natural Products.

These mini-symposia were organized in 19 Lectures and 50 Oral Communications including the presentation of Cuban relevant research centers in this field, such as the Center of Toxicological and Biomedical Investigation from Santiago de Cuba, the Center of Pharmaceutical Chemistry, and the Center of Research and Drug Development from Havana.

In this forum, a total of 177 Posters were presented that related to pharmacological effects and other topics like market, regulatory status and the intellectual property aspects of natural products. The Plenary Closing addressed those phytopharmaceuticals such as novel therapeutic tools to veterinary and human use by Dr. Evangelina Marrero from the National Center for Animal and Plant Health, Cuba. Dr. José M. Prieto, University of London, United Kingdom, related new uses of cannabis in Europe. Dr. Semir Omar, Health Canada, presented a pre-

market assessment of natural health products in Canada; and Dr. Diadelis Remírez, National Center of State Quality Control of Drugs, Cuba, reported on the regulatory status of herbal medicine in Cuba.



*In Poster Sections the best 12 works for the quality of investigations were awarded in Pre-clinical Pharmacology, Clinical Trials, Pharmacoepidemiology, Pharmacological Surveillance and other disciplines related with Pharmacology. On the left, Drs. Nelson Merino (President of Poster Commission) and Dr. Gabino Garrido (President of Scientific Committee) during the Award Nominations. On the right, M.Sc. Marisela Valdés (Cuba) shows an interesting study about Intellectual Property and its relationship with decision making in the research and development of new products.*

FAPRONATURA 2006 constituted an exceptional opportunity to strengthen the scientific exchange and collaboration among professionals who not only conduct research in the field of pharmacological sciences and other related disciplines, but also explore the functions of natural products. It also served as a unique venue for convening the first meeting of those professionals from Latin America and other countries involved in the initiative to create a Latin American informative Bulletin specializing in Medicinal and Aromatic Plants. This is an example of how much can be achieved in this field from personal dedication to the important scientific work necessary for the development of our people and their cultures.



*On the left, Dr. Evangelina Marrero (past president of Cuban Society of Pharmacology) and Dr. Gabino Garrido (first vice-president of Cuban Society of Pharmacology and president of Scientific Committee of FAPRONATURA 2006). On the right, Dr. Diadelis Remírez (Cuba) during her presentation about the regulatory status of herbal medicine in Cuba.*

Around 100 Cuban researchers from universities, medical sciences faculties, investigation institutes, assistance centers, hospitals and community pharmacies participated in this event. FAPRONATURA 2006 represents a qualitative jump for the Cuban Society of Pharmacology as the forum was organized into specific themes within the Pharmacology of Natural Products. All of this demonstrates the importance of the scientific activities as a part of the strategies being developed in Cuba to facilitate the integration, collaboration and the professional scientific advances for and by those researchers working in this important field.

It is important to highlight the diverse participation of 100 scientists who traveled from Argentina, Austria, Belgium, Brazil, Bulgaria, Cameroon, Canada, Chile, China, Colombia, Croatia, Ecuador, Egypt, Finland, Germany, India, Indonesia, Iran, Italy, Malaysia, Mexico, Nigeria, Pakistan, Peru, Poland, Portugal, Republic of South Africa, Russia, Serbia, Slovakia, Slovenia,



Spain, Switzerland, Thailand, Turkey, United States, United Kingdom and Venezuela. Their presence contributed to the quality of the presentations and their continuous messages of support and solidarity left an indelible print for the history of FAPRONATURA 2006.

There were more than 250 presentations between the conferences, lectures, symposia, and posters, as well as a debate. The analyses and reciprocal exchange enhanced the sharing of acquired knowledge among institutions from 39 countries while encouraging future research for new solutions and increased publications in pharmacological and other scientific journals for the development of new medicines from natural products.

We look forward to FAPRONATURA 2009. ●

Dr. Gabino Garrido  
President  
Scientific Committee  
FAPRONATURA 2006  
Cuban Society of Pharmacology

For more information, please visit:  
<http://www.scf.sld.cu>



*During FAPRONATURA 2006 the Latin-American and Caribbean Bulletin of Aromatic and Medicinal Plants (BLACPMA) awarded the best Posters. In this occasion the First Award was to Dr. Javier Osorio (Colombia). In the photo Drs. René Delgado (Cuba, President of Organizing Committee), Gabino Garrido (Cuba, President of Scientific Committee), Javier Osorio (Colombia), José L. Martínez (Chile, Managing Editor of BLACPMA) and José M. Prieto (UK, Executive Editor of BLACPMA)*

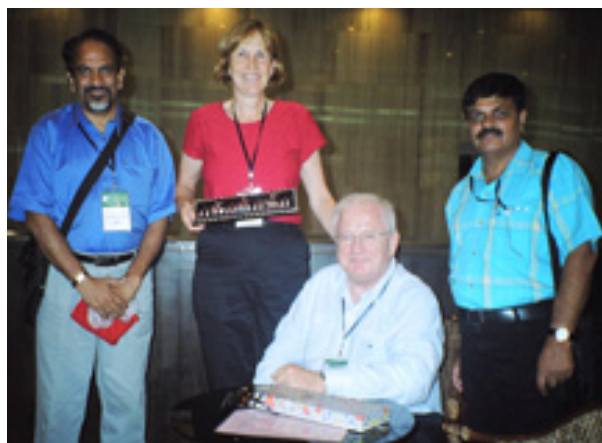
*Around 200 delegates from 39 countries participated in FAPRONATURA 2006. In the photo, a representation from Brazil, Canada, Colombia, Cuba, Egypt, Germany, Italy, Mexico, Pakistan, Poland, Portugal, United, Kingdom, and United States.*



# Gatherings around the Globe



*The officers of the Turkish Pharmacological Society recently convened in Kocaeli, Turkey. L→R: Hakan Orer, Treasurer; Oner Süzer, Vice-President/Chair; Bulent Gumusel, Secretary-General; Faruk Erden, Board Member; Ersin Yaris, Board Member; and Mehmet Melli, President/Chair.*



*Visiting with with the Indian Pharmacological Society (IPS) during IUPHAR 2006, L→R: Y.K. Gupta, President, IPS, and Prakash V. Diwan, General Secretary, IPS, with Sue Piper Duckles, President, IUPHAR, and Paul Vanhoutte, Past President, IUPHAR.*



*The Latvian Society of Pharmacology shared the celebration of President Vija Klusa's birthday on September 5th among colleagues of the Department of Pharmacology, Faculty of Medicine, University of Latvia. L→R: Jolanta Pupure, Simons Svirskis, Juris Rumaks, Baiba Jansone, Zane Dzirkale, and Vija Klusa.*

Send us pictures of your event! E-mail photographs in .jpg format and text in Word format to [iuphar@kumc.edu](mailto:iuphar@kumc.edu) .



## SYSTEMS BIOLOGY AND GALEN:

### A historical look at combination drug therapy around the world



Stata Norton, Ph.D.  
Emeritus Professor of Pharmacology  
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The concepts of systems biology, the study of biological processes containing redundant and multifunctional variables, are applicable to the therapeutic use of drug combinations (van der Greef, 2005; de Silva and Stumpf, 2005; Fitzgerald et al., 2006). Currently, drug combinations are routinely used to treat cancer (Stilwell et al., 2006), inflammatory conditions (Berg et al., 2005), neuropsychiatric disorders (Erdi et al., 2006) and the multiple pathologies associated with aging (Kriete et al., 2006; Salvioli et al., 2006).

Over the past 50 years, the reductionist approach to biological research has been extraordinarily successful in defining more precisely the components of biological systems and their regulation (Wiley, 2006). While the ultimate goal has been to identify a single target that may be amenable to pharmacological manipulation, this is not always possible. Thus, systems biology retains its importance as a means for understanding how changes at the molecular level will affect the organism as a whole. In many cases such studies suggest that the most effective therapy may entail administration of multiple drugs. In this regard it is interesting to look back to an earlier era, before drug mechanisms were understood, and reflect on the extensive use of drug combinations for treatment of various pathologies.

Behind the models for systems biology is the concept of stochastic processes, whether at the level of the gene, cell, tissue or whole animal. That is, a cascade of sequential events may follow a single stimulus. A second concept is that diverging pathways of discrete events may be involved in generating a signal. Any of these events is a potential drug target. Both concepts suggest the importance of studying the effects of multiple drugs on a system, although this increases the complexity of actions in the system. Nevertheless, the use of several ingredients acting at different loci may offer great therapeutic advantage. Historically, for as long as records of *materia medica* have been kept, mixtures of ingredients have been employed for treating illnesses. The best reason for administering multiple agents is to enhance effectiveness while minimizing side effects. Thus, with several ingredients, it may be possible to reduce the dose of the individual active agents and achieve the same, or perhaps superior, benefit as compared with a higher dose of any of these drugs alone. Throughout history, both multiple and single agents have been used for management of certain conditions.

The mechanism of action need not be known for a treatment to be beneficial. Indeed, for the ancients all that was needed to justify the use of a particular medication was a sufficient number of empirical observations to confirm its therapeutic value. Galen (130-200 CE) was the major medical figure of his era. An encyclopedist, he gathered information dating back to the 4<sup>th</sup> century BCE that was available in medical center libraries located around the Mediterranean. Galen's writings fill 20 volumes in the *Opera Omnia* edition by Kuhn. This book contains the



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original Greek text with Latin translation (Kuhn, 1827). In therapeutics, Galen compiled four treatises on antidotes, three on common remedies, and one on his methods. There was a strong element of empiricism in his medical practice. That is, a skilled practitioner like Galen used observation as the primary means for determining the beneficial effect of a drug or drug combination. Indeed, Galen ended his description of some remedies with the statement that it worked when tested, writing

‘*Medicamentum probatum est*’ or ‘*Experientia comprobatum est.*’ While such evaluations lacked the rigor of modern clinical trials, there is no question therapeutically useful agents were identified in this way. In fact, the humoral theory used by Galen to describe the causes of disease and action of drugs did not require rigorous explanation of therapeutic action.

As historical examples of the use of remedies with multiple ingredients, seven therapeutic interventions for various inflammatory skin conditions are presented here chronologically from the 7<sup>th</sup> century BCE to the 19<sup>th</sup> century CE.



Courtesy of S. E. Anders  
Stanford Univ.

### **Remedy 1. 7<sup>th</sup> Century, BCE (Assyria)**

#### **Poultice for inflamed sores**

**Ingredients:** Fir oleoresin (*Abies* sp.); linseed (*Linum usitatissimum* L.); pine oleoresin (*Pinus pinea* Habl.); castor bean (*Ricinus communis* L.); rose (*Rosa* sp.); wheat flour (*Triticum* sp.)

The earliest extant records of medical remedies come from Egypt and Mesopotamia. Cuneiform texts from Assurbanipal’s library in Nineveh in the 7<sup>th</sup> century, BCE, have been translated and the plants identified. An even earlier *materia medica* is contained in the Ebers Papyrus from Egypt, dated about 1550 BCE, one of the oldest medical records still in existence. As in the other remedies provided below, mixtures of plant products were typically used to treat medical conditions. However, identification of ancient plants using modern scientific names may not reflect precisely the plant used centuries ago. Nonetheless, some botanical information, such as identification of exudates of pine trees, myrrh, and cinnamon bark, is well established historically. This remedy from Assyrian medicine is typical of those translated by Thompson (1949). Remedies described in the cuneiform tablets included 250 kinds of plants and 120 minerals (Thompson, 1924). The two most common ingredients were oleoresins from pine or fir trees. The treatments were used for various conditions and contained either single or multiple ingredients. A large number of them were used to treat sores or wounds on the torso or extremities. ‘Stomach complaints’ were also commonly noted for treatment (Thompson, 1929). The use of flour in poultices was also common for treating skin conditions.



Courtesy of T. Schoepke  
www.plant-pictures.com

### **Remedy 2. 4<sup>th</sup> Century, BCE (Theophrastus)**

#### **Ointment for all inflamed wounds**

**Ingredients:** Oil of balanos (*Balanites aegyptiaca* (L.) Del.); cassia (*Cinnamomum cassia* Blume); cinnamon (*Cinnamomum cassia* Blume); myrrh (*Commiphora myrrha* (Nees) Engl.); pine resin (*Pinus* sp.)

Theophrastus described this ointment, called *megaleion*, as a treatment for inflammation from wounds (Hort, 1980). The ointment contained dry pine resin, which was obtained by heating the pine oleoresin, a practice described by Theophrastus and later by Pliny in his “Natural History”. Myrrh is the gum resin from a tree (*Commiphora myrrha*) and oil of balanos is from the fruit or bark of a small Egyptian tree (*Balanites aegyptiaca*). Cinnamon, from the bark of *Cinnamomum cassia* and other species of *Cinnamomum*, is well known. Cassia is the dried ground twigs of *Cinnamomum cassia* and is still used in traditional Chinese medicine (Wu, 2005). A similar ointment in the Ebers Papyrus contained oil of balanos, cinnamon, myrrh and frankincense (Ebbell, 1937).



Courtesy of The VRoma Project, www.vroma.org

### **Remedy 3. 2<sup>nd</sup> Century, CE (Galen)**

#### **Powder for sores**

**Ingredients:** Tragacanth (*Astragalus* sp.); frankincense (*Boswellia carterii* Birdw.); myrrh (*Commiphora myrrha*); mastic (*Pistacia lentiscus* L.); oak gall (*Quercus* sp.); rose (*Rosa* sp.).



In the 2<sup>nd</sup> century, CE, Galen wrote extensively on remedies from information gathered from his medical training in Pergamon, his travels in Egypt where he may have visited what was left of the great library in Alexandria, and his years in Rome as physician to Marcus Aurelius. Galen had ample opportunity to observe the healing of wounds during the four years he served as surgeon to gladiators in Pergamon (Brock, 1991). In his three treatises on common remedies, Galen lists numerous remedies for conditions from head to toe or, as he put it, 'from hair to feet.' This powder for sores contained four gum resins to which were added dried roses and powdered oak galls (Book III, Common Remedies, Kuhn, 1827). The use of oak galls with high concentrations of tannins was common in ancient remedies. Tragacanth is the gum exudate from roots of species of *Astragalus* that are indigenous to Asia Minor, Syria and India.

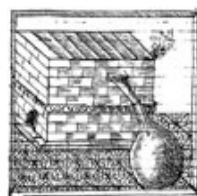


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www.world-mysteries.com

**Remedy 4. 1552 (Martin de la Cruz)**  
**Poultice for wounds and infected areas**

**Ingredients:** Andean alder (*Alnus acuminata* Kunth); low cypress (*Taxodium mucronatum* Ten.); wax; egg yolk.

A book of Aztec medicine was written in 1552 by Martin de la Cruz, who was familiar with the local traditions (Gates, 2000). This remedy contained the oleoresins from the Andean alder tree that is indigenous to Mexico (*Alnus acuminata*) and the Mexican cypress (*Taxodium mucronatum*). Wax and egg yolk were added to make a poultice. The Aztec concept of medicine was an attempt to balance opposites, such as the use of 'hot' to treat something associated with 'cold' (Byland, 2000).



Courtesy of Kenneth Spencer  
Research Library, Lawrence, KS

**Remedy 5. 1562 (Giovanni Andrea)**  
**Poultice for sores and wounds**

**Ingredients:** Terebinth (*Pistacia terebinthus* L.); rose (*Rosa* sp.); fava bean flour (*Vicia faba* L.); wax.

In 1562, Giovanni Andrea, a Friar of the Order of Saint Jerome in Italy, recorded a remedy for sores and wounds. His manuscript was a compilation of therapies used by the friars for treatment of the sick. His remedy for sores and wounds resembles some of the earlier concoctions that contain a gum resin, oil of roses, wax, and flour (Andrea, 1562). Following the Hippocratic concept, Andrea accepted that the four humors in the body were related to disease, and he associated the humors with the four 'elements' in nature, fire, air, water and earth. The two humors, blood and choler (yellow bile), were warm like fire and air; phlegm and melancholia (black bile) were cold like water and earth. In addition, each humor was either wet or dry. That is, blood was warm and wet; choler was warm and dry; phlegm was cold and wet; melancholia was cold and dry. He called these the four 'natural' components of the body, like the four 'natural' elements. However, these concepts had little influence on his selection of remedies for which empirical observation was sufficient to encourage their use, rather than any theory of drug mechanisms.



**Remedy 6. 1578 (Shih-Chen Li)**  
**Poultice for carbuncles, carcinomas and infected sores**

**Ingredients:** Lignum aloes (*Aquilaria agallocha* Roxb.); frankincense (*Boswellia carterii*); myrrh (*Commiphora myrrha*); dodder (*Cuscuta* sp.); walnut (*Juglans regia* L.); scurf pea (*Psoralea coryifolia* L.); honey.

The use of plant resins for treatments of skin conditions was a common practice in China. An old Chinese *materia medica*, written by Li Shih-Chen, described this remedy for treatment of various skin conditions. The mixture contained four resins mixed with three additional ingredients and was bonded with honey (Li, 1578). Many poultices were mixed with honey in all early remedies. The theory of ancient Chinese medical practice, which is employed to this day by those practicing traditional medicine, involved drugs that acted on opposites: *yin* (cold, interior and deficiency) and *yang* (hot, exterior and excess) (Wu, 2005). This concept of drug action did not exclude the use of any plant or animal extract if it proved effective.





### Remedy 7. 1898 (J.V. Shoemaker)

#### Antiseptic poultice for ulcers

**Ingredients:** Myrrh (*Commiphora myrrha*); assafoetida (*Ferula assafoetida* L.); galbanum (*Ferula gummosa* Boiss).

This mixture of one resin and two gums was described as an antiseptic for ulcers (Shoemaker, 1898). A few years later (1910) a 'Manual of Therapeutics' was published by Parke, Davis and Co., a U.S. pharmaceutical firm, listing their products, which included the same remedy for 'unhealthy ulcers.' In traditional Chinese medicine, a mixture of frankincense and myrrh is still recommended for painful swellings and ulcers that do not heal (Wu, 2005).

The early medical literature of India is contained in the Ayurvedic texts which have been revised over the centuries. One of these, the "Sushruta Samhita", is dated as originating in about the 6<sup>th</sup> century, BCE. The "Sushruta Samhita", which has been translated from the Sanskrit (Bhishagratna, 1963), includes a remedy for ulcers using pine, cedar resins and frankincense. As in many early explanations of disease, the Ayurvedic text suggests disease results from disturbances in the three fundamental principles governing body forces. These principles, *vayu*, *pitta* and *kapha*, have been loosely translated as 'humors' (Chakravarty, 1993).

The seven remedies described, spanning nearly 3,000 years, shared three characteristics: the active ingredients included plants that lacked significant alkaloid content but contained oleoresins or gum resins; they were recommended for application to sores or wounds that were inflamed or infected; and mixtures of ingredients were commonly used. There were several reasons why multiple ingredients were widely employed for treating various conditions. Once a combination was accepted as effective, there was a tendency to continue its use as generally approved. Moreover, a remedy recommended by a well-known practitioner, such as Galen, had value because it was developed by an authority. Often, the name of the remedy became associated with a particular use and the name of the authority promoted that use. Examples include Warburg's tincture, developed by Dr. Warburg to combat malaria in India. This remedy contained quinine and a host of flavorful plant ingredients (Shoemaker, 1898). The third and most compelling reason for the prevalence of drug combinations during this time is that the mixtures may have been more effective than the ingredients when used separately. Although potentiation of drug action by a decrease in the metabolic rate was a possible reason for increased effectiveness, it was probably more important that the mixture acted at different loci in a complex system, making it possible to obtain the desired response while minimizing side-effects and toxicities.

The plants in these seven remedies are listed in Table 1, along with current information on their active constituents as antimicrobials and as anti-inflammatory drugs. These descriptions are based on research examining the effect of these substances on various microorganisms and on inflammatory processes, such as the formation of free radicals based on their ability to inhibit formation of agents at different locations in the inflammatory cascade common to wounds, sores, abscesses and ulcers. Precise mechanisms of action proposed for these natural products include inhibition of NF kappa B activation, of iNOS expression, and of LPS-induced macrophage NO formation. Some have also been found to activate apoptosis and to inhibit COX. These data indicate that the ancients did indeed identify agents with demonstrable anti-inflammatory and anti-microbial activities. Thus, each of the remedies, although differing geographically in the availability of some ingredients, displays mechanisms of action that can explain its therapeutic utility. In this regard it is noteworthy that the resins used, some of which are from plants of the families Pinaceae and Burseraceae, are both anti-inflammatory and anti-microbial.



Continued on page 18..



**Discussion.** It is reasonable to assume that in his years of medical practice Galen had considerable opportunity to observe the results of treatments for wounds and sores using various remedies, both traditional and of his own devising. Similar empirical evaluations were undoubtedly made in other cultures over the centuries. The wide-spread use of remedies with similar anti-inflammatory and anti-microbial actions is evidence that many of these remedies were identified through observation by practitioners, even though mechanisms of action were unknown at the time. The modern concept of therapy based on an understanding of cellular targets for specific chemicals, has no parallel in earlier hypotheses of disease and drug action. The theory followed by Galen for the cause of disease followed the dictates of the 4<sup>th</sup> century, BCE, Hippocratic school of medicine. It was based on the four humors, with remedies being antagonists for warm, cold, wet or dry. Other early concepts of disease also proposed that the value of remedies existed in having opposite actions, such as cold versus warm. While the application of this theory of opposites of drug action without strict demonstration of cause and effect may have led to including useless ingredients, the very looseness of the hypotheses allowed direct observation of effectiveness to substitute for strict adherence to theory. This approach would have been readily employed when a remedy was used to treat skin conditions. Sores, ulcers, abscesses, wounds, burns and dermatoses of various kinds must have been plentiful in patients seeking the help of physicians in antiquity. Therefore, it is not surprising that the ingredients of old remedies display anti-microbial and anti-inflammatory activities when applying modern scientific standards.

The current aim of developing single drugs for specific clinical conditions represents a shift that evolved slowly from the polypharmacy of antiquity. Its origins can be traced to the intellectual tumult of 16<sup>th</sup> century Europe. At that time Paracelsus was the loudest voice denouncing Galen. His early experience with diseases of miners led Paracelsus to become interested in the possibility of specific remedies for each condition. Thus, he suggested use of the same mixtures of 'quintessences' for diseases exhibiting the same signs and symptoms. Paracelsus also espoused the alchemical concept that the fifth 'element,' called the 'quintessence' of a substance, could be obtained by distillation. These ideas have been described in a selection of Paracelsus' writings, translated with commentary (Sigerist, ed., 1996). Distillation was a popular alchemical tool as the necessary apparatus was becoming more generally available. As an example of its use to produce a quintessence, the effect of repeated distillations of wine was carefully documented by Andrea (1562). The first three sequential distillations produced '*aqua vite*' (brandy), with further distillations, up to seven, increasing the potency to '*aqua ardente*' (burning water). Another idea, current in the period, further exemplified interest in the specificity of remedies. This was the 'doctrine of signatures,' a belief that the form of a plant was a guide to its value as a remedy. Thus, a yellow flower indicated that the plant was of value in jaundice, whereas a heart-shaped leaf suggested value in cardiac conditions and so on. The development of chemistry from alchemy in succeeding centuries settled the problem of the elements and advances in biology and chemistry led to a keener appreciation of the causes of disease and the mechanism of drug action.

Although the seven remedies described here were for topical application, the use of multiple drugs in pills, tablets and elixirs continued into the 20<sup>th</sup> century. As late as 1946 the National Formulary of the U.S. included many mixtures as official standards, such as a pill containing aloes, belladonna extract, cascara extract, podophyllum resin, ginger oleoresin and powdered licorice (National Formulary, 1946). Nevertheless, emphasis was clearly shifting to prescriptions containing a single therapeutic agent. Although in the early years of the 20<sup>th</sup> century the polypharmacy practiced throughout medical history was still present, the scientific approach to therapy was shortly to relegate mixtures to the category of non-prescription remedies while individual chemicals, targeted to specific disease states, began to dominate therapeutics.

**Summary:** For nearly 3,000 years diseases and disorders were treated throughout the world by employing the use of multiple ingredients. It is interesting that use of the same, or similar, plant extracts evolved in different parts of the world, suggesting their effectiveness was established

empirically. During the 20<sup>th</sup> century, research on drugs focused on defining cause and effect at the cellular level. This approach does not lend itself to the use of plant extracts or other chemical mixtures given their complex pharmacology. A broader approach to drug discovery appears to be developing in the 21<sup>st</sup> century. Thus, the concept of a pathological condition is expanded to include the interactions of systems modeled by computer, not a specific target site. A corollary to the systems approach in describing pathology is the development of drugs that act at various sites in the involved systems. Thus, it is possible that more therapies in the future will employ the use of multiple drugs, just as was done by the ancients thousands of years ago.

**Table 1: Anti-inflammatory and Anti-microbial Actions of Ingredients in the Remedies**

Plant Name Common Name	Part Used/ Ingredient	References / (Habitat)	
		Anti-inflammatory	Anti-microbial
Abies sp. (Fir)	Oleoresin/ abietic acid	Takahashi et al., 2003 (World-wide Northern Hemisphere)	Pichette et al., 2006
Alnus acuminata (Alder)	Leaf/ pinosylvin	Lee et al., 2006 (North and South America)	Lee et al., 2005b
Aquilaria agallocha (Lignum aloes)	Wood or resin	Kim et al., 1997 (Central and Eastern Asia)	(not identified)
Astragalus sp. (Tragacanth)	Gum/ astragalosides	Andrikopoulos et al., 2003 (Mediterranean area and Asia)	Chang and But, 2001
Balanites aegyptiaca (Balanos)	Bark or fruit	Speroni et al., 2005 (North Africa)	(not identified)
Boswellia carterii (Frankincense)	Gum resin	Banno et al., 2006 (North Africa and Arabia)	Hussein et al., 2000
Cinnamomum cassia (Cinnamon)	Leaf or bark	Lee et al., 2005a (Central and Eastern Asia)	Ooi et al., 2006
Commiphora myrrha (Myrrh)	Oleo-gum resin	Racine and Auffray, 2005 (North Africa and Arabia)	El Ashry et al., 2003
Cuscuta sp. (Dodder)	Stem or seed	Koo et al., 2005 (Europe)	Pal et al., 2006
Ferula assafoetida (Assafoetida)	Gum resin/ ferulic acid	Lu et al., 1998 (Central Asia)	Polya, 2003
Ferula gummosa (Galbanum)	Gum resin	(not identified) (Central Asia)	Eftekhari et al., 2004
Juglans regia (Walnut)	Leaf	Erdemoglu et al., 2003 (Asia Minor to the Himalayas)	Qadan et al., 2005
Linum usitatissimum (Flax)	Seed	Rajeshia et al., 2006 (Mediterranean area)	Polya, 2003
Pinus sp. (Pine)	Oleoresin/ abietic acid	Takahashi et al., 2003 (World-wide)	Pichette et al., 2006
Pistacia lentiscus (Mastic)	Gum resin	Andrikopoulos et al., 2003 (Mediterranean area and Western Asia)	Koutsoudaki et al., 2005
Pistacia terebinthus (Terebinth)	Oleoresin	Giner-Larza et al., 2001 (Mediterranean area and Near East)	Kordali et al., 2003
Psoralea corylifolia (Scurf pea)	Oleoresin	Tang et al., 2004 (Eastern and Central Asia)	Yin et al., 2004
Quercus sp. (Oak)	Oak gall/ tannic acid	Kaur et al., 2004 (World-wide, temperate Northern Hemisphere)	Ali Shtayeh et al., 2003
Ricinus communis (Castor bean)	Seed and root	Ilavarasan et al., 2006 (Tropics)	Ali Shtayeh et al., 2003
Rosa sp. (Rose)	Flower	Schiber et al., 2005 (World-wide)	Mahmood et al., 1996
Taxodium mucronatum (Low cypress)	Oleoresin/ isorhamnetin	Bao and Lou, 2006 (Central America)	Yang et al., 2001
Triticum aestivum (Wheat)	Seed	Polya, 2003 (Mediterranean area and Asia)	Ali Shtayeh et al., 2003
Vicia faba (Fava bean)	Seed	Schaffer et al., 2004 (Mediterranean area)	Ali Shtayeh et al., 2003



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# 2007 Anniversaries

## IUPHAR congratulates the following member societies:

Japanese Pharmacological Society 1927 - 2007

Belgian Society of Fundamental and Clinical  
Physiology and Pharmacology 1947 - 2007

Korean Society of Pharmacology 1947 - 2007

Egyptian Society of Pharmacology  
and Experimental Therapeutics 1957 - 2007

Latvian Society of Pharmacology 1972 - 2007

Pharmacological Society in Taipei 1982 - 2007

Serotonin Club 1987 - 2007

### Highlight: The Egyptian Society of Pharmacology & Experimental Therapeutics (ESPET) Celebrating 50th Anniversary

ESPET was founded in 1957 by the late Professor Mohamed Amin Khayyal (1904-1971), who was the Head of the Pharmacology Department in the Faculty of Medicine at Cairo University. Dr. Khayyal was succeeded by Professor E. E. Galal, the current President of the Society. At origination, ESPET consisted only of a handful of pharmacologists, but has grown rapidly over the years to comprise today hundreds of pharmacologists from different disciplines such as medicine, pharmacy and veterinary medicine.

The Society was one of the earliest African members to join IUPHAR. Because of the unique geographical position of Egypt in Africa and the Middle East, ESPET has tried to consolidate relations between both African and Arab societies of pharmacology by participating in the establishment of what was once called the Union of African Societies of Pharmacology and, more recently, initiating the Arab Union of Pharmacology. With the present South African initiative to reunite African pharmacologists, ESPET will continue to play a pivotal role.

The achievements of ESPET include publishing a scientific journal, holding an annual conference, promoting the teaching of evidence-based medicine, holding workshops for continued medical education, introducing computer simulations for practical pharmacology, and promoting the teaching of clinical pharmacology as a discipline. The latter efforts have culminated in creating a Division of Clinical Pharmacology, now headed by Professor Mohamed Ibrahim. ESPET has always been keen to invite eminent foreign pharmacologists to interact with Egyptian colleagues. A few names that come to mind include John Gaddum, Franz Gross, Gladwin Buttle, Michael Rand, William Bowman, Brian Callingham, Charles Advenier, Herrmann Ammon, Fritz Kemper and Theophile Godfraind.

The 50th anniversary of ESPET will be commemorated by holding a scientific conference in the spring of 2007. Additional details will be forthcoming on the IUPHAR website for the many guests, local and foreign, interested in participating in this unique event. ●

M. T. Khayyal  
Vice President of ESPET  
Councillor, IUPHAR Executive Committee



*Front row L→R: W. Koskowski, M.A.Khayyal (father of our own IUPHAR Executive Committee Councillor, M.T. Khayyal), John Gaddum. Back row L→R: Unknown Individual, Hertha Wiemer, M. Mahfouz, and R. Abdelmeguid. This photograph was taken during the 1955/56 academic year.*

# In Memory of Setsuro Ebashi

Dr. Setsuro Ebashi, a former President of IUPHAR, passed away on July 17, 2006 at the age of 83. After graduating from the Faculty of Medicine, University of Tokyo in 1944, Dr. Ebashi stayed there by joining Professor Kumagai's laboratory in the Department of Pharmacology.

He took inspiration from Chemistry of Muscle Contraction (1947) by Albert Szent-Györgyi, where the molecular mechanism of muscle contraction was described as the interaction of myosin and actin in the presence of adenosine 5'triphosphate (ATP). Wondering how contraction and relaxation are regulated, Dr. Ebashi conducted experiments that revealed a minute amount of  $\text{Ca}^{2+}$  is necessary for the contractile reaction, and that fragmented sarcoplasmic reticulum readily accumulates  $\text{Ca}^{2+}$  in the presence of ATP and removes this cation from the myosin-actin system to induce relaxation. He also discovered troponin, the calcium receptor protein in the contractile system. His work was the first to demonstrate conclusively that  $\text{Ca}^{2+}$  is an important mediator of intracellular signaling. As a result of this discovery, the importance of calcium in numerous cellular processes, including the release of neurotransmitters and hormones, metabolic switching, and gene expression, has been established. Thus, Dr. Ebashi's work ushered in the "calcium era", making possible significant advances in biology in general and pharmacology in particular.

At the age of 36 Dr. Ebashi was promoted to Professor of Pharmacology at the University of Tokyo, where he mentored many excellent young scientists. During his career he received numerous awards in recognition of his research, including the Order of Cultural Merit, the highest scientific honor in Japan. He was a member of the Japan Academy, a Foreign Member of the Royal Society of London, and of academies of science in the USA, Germany, and Belgium.

Dr. Ebashi presided over the highly successful 8th International Congress of Pharmacology that was held in Tokyo in 1981. He also served IUPHAR for many years as a member of Executive Committee, and as President from 1990 to 1994.

Dr. Ebashi's charisma and outgoing personality earned him friends throughout the world. He was warm-hearted, helpful to his colleagues, and a patriot. Despite suffering physical handicaps following a stroke in 2000, his mind remained clear and his wit keen. His sudden death came as a surprise since his condition appeared stable in recent years. He will be sorely missed by his many friends, students and colleagues. ●



Makoto Endo

# Integrative and Organ System Pharmacology

The emergence of numerous *in vitro* techniques has led to a reduction in the number of researchers who are skilled at planning and conducting *in vivo* experiments. With a grant from the U.S. National Institute of General Medical Sciences (NIGMS), courses have been developed by the Department of Pharmacology and Toxicology at Michigan State University, Departments of Pharmacology at University of California at San Diego, University of Nebraska, and University of North Carolina. Students have come from the USA, Canada, and Europe and include graduate students, research technicians, post-doctoral trainees, and faculty.

Many of the laboratory exercises are extended for students wishing to further analyze their experiment results.



*M.S.U. Short Course participant, Seema Dhindaw (left) is assisted by graduate assistant Jessica Diaz (right) with experiment to measure the effects of drugs on vascular muscle tone.*



*Above from left to right: Yuankin Lin, Ph.D. and Patrick Murphy, Ph.D. Candidate (both from University of California – San Francisco) conduct central nervous system research using a rodent model at the Integrative Organ Systems Short Course held at Michigan State University in August 2006.*

At Michigan State University, participants are provided lectures, laboratory demonstrations and an opportunity to use state-of-the-art equipment to practice surgical implantation techniques, whole animal system monitoring, and data collection procedures. Techniques to study pharmacokinetics, renal function, vascular smooth muscle function, autonomic control of heart rate and blood pressure, liver function, and behavior have been included with training in basic surgical procedures.

The NIGMS funding of these short courses extends through 2008. Beyond then, these institutions may continue to offer these short courses on their own or to integrate the materials into other instructional programs. Michigan State University is incorporating the content and format of its short course into a new Professional Masters of Science in Integrative Pharmacology (ProMS). The ProMS degree will be almost entirely online with the exception of an on-campus course on *in vivo* research procedures based upon the IOSG short course. However, students will begin the Masters course online by viewing recorded lectures, surgical demonstrations, and reading online instructions. Following that instruction, they will arrive on campus to immediately begin their hands-on experience in conducting experiments, collecting and analyzing data. ●

Dr. Peter Cobbett  
Director

Editor's Note: For further information concerning short courses in Integrative and Organ System Pharmacology please visit <http://www.nigms.nih.gov/Training/IOSP.htm>. This NIGMS website offers descriptions and hyperlinks to all four programs.





## INTERNATIONAL FUNDING FOR AUTISM RESEARCH

Recently, the National Alliance for Autism Research (NAAR) merged with the newer Autism Speaks to form Autism Speaks, Inc., a nonprofit organization devoted to funding basic and clinical research on autism. It is anticipated that during 2007, Autism Speaks, Inc. and Cure Autism Now (CAN) will join together to increase further the resources available for research and advocacy programs. Autism Speaks, Inc. will continue to expand the programs initiated by NAAR over the past decade. During this time, NAAR funded research projects in Canada, Denmark, Finland, Germany, India, Ireland, Israel, Italy, the Netherlands, Russia, South Korea, Spain, the United Kingdom, the United States, and other countries.

It is anticipated that the 2007 budget for Autism Speaks, Inc. will approach U.S. \$20,000,000. A major fund raising effort is currently underway with the aim of raising over U.S. \$100,000,000 by 2011. The Autism Speaks, Inc. grant programs, with the maximum amount provided each year and maximum duration of support, include Early Intervention Treatments, U.S.\$400,000 for three years; Basic Research, U.S.\$150,000 for three years; Clinical Research, U.S.\$150,000 for three years; Pilot Studies, U.S.\$60,000 for two years; Augmentation and Bridge Grants, U.S.\$200,000 for one year; and Physician Investigator Beginning Autism Research, U.S.\$110,000 for three years.

Visit [www.autismspeaks.org](http://www.autismspeaks.org) for additional information and grant application material.



# Upcoming Events

## January

### NSFT Annual Scientific Meeting

January 22 - 25, 2007 in Beitostølen, Norway

Host Society: Norwegian Society of Pharmacology and Toxicology

<http://www.nsft.net>

### HAVANA-REDOX 2007

International Conference of Oxidative Stress

January 25 - 27, 2007 in Havana, USA

Host Society: Cuban Society of Pharmacology

<http://www.scf.sld.cu>

## February

### Turkish Pharmacological Society Annual Meeting

In memory of Professor Kazim Turker

February 28 - March 2, 2007 in Ankara, Turkey

Host Society: Turkish Pharmacological Society

<http://www.tfd.org.tr>

## March

### Banff 2007: Pharmacology and Therapeutics Conference

March 4 - 8, 2007 in Banff, Alberta, Canada

Host Societies:

Western Pharmacology Society

Pharmacology Society of Canada

Canadian Society of Clinical Pharmacology

Swiss Society of Pharmacology & Toxicology

<http://www.westernpharmsoc.org/meeting2007.html>

### ISO P Immunopharmacology and Drug Safety Training Course

March 22 - 23, 2007 at Semmelweis University in Budapest, Hungary

Host Society: International Society of Pharmacovigilance

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

# Upcoming Events

## April

### 19<sup>th</sup> ACCP Frontiers Symposium

Disease Progression Models and Adaptive Trial Designs

April 20 – May 1, 2007 at the Baltimore Marriott Waterfront in Baltimore, USA

Host Society: American College of Clinical Pharmacology

<http://www.accp1.org>

### Third GPRC Colloquium

April 27 - 28, 2007 in Washington, DC, USA

Host Society: Division for Molecular Pharmacology of

American Society of Pharmacology and Experimental Pharmacology

[http://www.aspet.org/public/meetings/GPCR\\_07\\_Program.htm](http://www.aspet.org/public/meetings/GPCR_07_Program.htm)

### Experimental Biology 2007

April 28 – May 2, 2007 in Washington, DC, USA

Host Society: American Society of Pharmacology and Experimental Pharmacology

<http://www.aspet.org/public/meetings/eb07.html>

## May

### XII Serbian Congress of Pharmacologists and II Serbian Congress of Clinical Pharmacology

with International Participation

May 9 - 12, 2007 in Palic, Serbia

Host Society: Serbian Pharmacological Society

<http://www.smart4.co.yu/English/Smart-Dobrodosli.htm>

or e-mail the Congress Secretariat ([vcupic@vet.bg.ac.yu](mailto:vcupic@vet.bg.ac.yu))

### ACCP SYMPOSIUM

Industry and Regulatory Experience with thorough ECG Trails (TQT):

Two years after ICH W14

May 2, 2007 at the Baltimore Marriott Waterfront in Baltimore, USA

Host Society: American College of Clinical Pharmacology

<http://www.accp1.org>

## June

### Kuopio Stroke Symposium 2007

June 6 – 8, 2007 in Kuopio, Finland

Host Society: Finnish Pharmacological Society

<http://www.sfy.fi>

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Not pictured: Donald Birkett, Sérgio Ferreira and Paul Vanhoutte

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