IUPHAR Update:
Future challenges for pharmacology and IUPHAR 2018-2022

The 2018 World Congress of Basic and Clinical Pharmacology in Kyoto (WCP2018) was a great success and we are deeply indebted to the organisers. We look forward already to WCP2022 in Glasgow. We have reproduced our past achievements and future objectives in this issue of Pharmacology International and here is a first draft of what we hope to achieve. We also hope to have propositions from pharmacology societies around the world. We had meetings with several societies at Kyoto, and we consider that the next four years will be very important for pharmacology. The president gives an excellent summary of the future in this issue of Pharmacology International. Future editions will give updates on all IUPHAR activities with regular section reports.

Defining IUPHAR

Pharmacology is the science of drugs and therapy, and how biologics interact with living cells. IUPHAR bridges preclinical and clinical research and will facilitate advances for health care in developing countries. Nearly all pharmacology societies are members of IUPHAR that represents ~37,000 clinical and preclinical scientists around the world. Let us make our voices heard!

IUPHAR is a Non-Governmental Organisation (NGO) in relation with the World Health Organisation (WHO). With the Clinical Pharmacology Division officers, and our WHO representative, Caroline Samer, we are redefining our WHO goals, and have had very fruitful meetings with WHO, defining future healthcare initiatives.

Our finances are critical to our activities and the main source of IUPHAR finance is the membership dues, which are critical to success. We are immensely grateful for funding from profitable WCPs, such as WCP2018, and from benefactors or grants. We also ask you to consider whether IUPHAR may be a useful partner for fund-raising with pharmacologists and pharmacology societies locally, by linking your national initiatives with global, or continental objectives and also links to our databases. Parthenon (Kristen Kovach, our executive officer) is doing a great job helping to manage our day-to-day organisation and should be the first point of call if you are interested in discussing the best ways to collaborate.



In addition, we have decided to enlarge our geographical representation with two co-opted members, Bhagirath Patel from India and Emilio Clementi from Italy. The executive committee now meets monthly via zoom, and annually in person, invited around a pharmacology society meeting. We thank the Indian Pharmacology Society for agreeing to host the meeting in 2019 (see natural product meeting announcement) and look forward to invitations from other societies. Executive committee members can contribute in a major way to society meetings and we again thank the Chinese, Australian, and Italian societies for hosting the meetings over the last four years.

We have also taken the opportunity of initiating a young investigator's committee with very broad geographical representation from the twelve pharmacological societies which nominated members. Carl White (ASCEPT) is the chair and Aisah Aubdool (BPS) vice chair. The chair is co-opted onto the executive committee. This committee represents the future of pharmacology and their composition allows a microcosm of the different challenges facing our science across the world.

Immunopharmacology

The attribution of the 2018 Nobel Prize for Medicine to the discovery of check-point inhibitors (with ~2000 associated clinical trials) underlies how important it is to further immunopharmacology. Our efforts via Immuphar, International Union of Immunological Societies (IUIS), and the Edinburgh database group are described in later articles in Pharmacology International, and we have made a flying start.

Natural products and Traditional Medicine

Natural products (NPs) represent a major part of the world's chemical diversity for drug discovery and involves traditional medicine, and also the discovery of specific NP drugs for key targets. IUPHAR has prioritised the resolution of the major challenge of providing evidence-based medicine in this field, with a series of meetings from 2014 to the present, listed below:

- Third IUPHAR NP World Congress IUPHAR Singapore 2015, (local organiser Eric Wong)
- Paris ICSU IUPHAR meeting May 2017 (M Spedding)
- Indian Pharmacology Society Meeting, July 2017, plus Ayush research centre
- Singapore, July 2017 (E Wong)
- Meeting with FDA-accredited research centre, Mississippi,
- Fourth IUPHAR NP World Congress IUPHAR Aberdeen (local organiser Cherry Wainwright), 2017
- Brazil Pharmacology Society, October 2017
- CNPHARS Lianyungang Meeting 2017 (Yongxiang Zhang, Guanhua Du)
- Paris ICSU IUPHAR meeting 2018 (M Spedding)
- CNPHARS Beijing 2018 (Yongxiang Zhang, Guanhua Du),
- Indian Pharmacology Society organise the 5th IUPHAR NP World Congress meeting in Hyderabad in December 2019**.**

This will be a continued priority with IUPHAR natural products and traditional medicines section. The Chinese, Indian, Brazilian, Singapore societies and PharfA have been particularly prominent and we thank them.

NC-IUPHAR

IUPHAR has established itself as an arbiter of research questions in the multiple areas of receptors, drug targets and therapy - what we know and don't know - with a synergy between industry and academia. This is achieved without conflict of interest as only validated, reproduced, data are used by our Nomenclature Committee (NC-IUPHAR), chaired by Steve Alexander, with Adam Pawson as the executive secretary, and the Edinburgh Database Group (Pr Jamie Davies). Over the last 30 years, NC-IUPHAR has had a major contribution in its structuring of modern pharmacology.

Over 90 subcommittees of about 700 expert scientists back our publicly available databases, accessed freely by scientists in 160 countries and which have resulted in more than 125 publications (h-index 80), available at http://www.guidetopharmacology.org/nciupharPublications.jsp. The Japanese Pharmacological Society have generously financed the travel of their members to the NC-IUPHAR meetings. An IUPHAR Editorial Board, chaired by Eliot Ohlstein, helps coordinate publications. It is our intention that NC-IUPHAR be pivotally involved with IUPHAR activities.

Receptor Databases

We benefit from – and we are also continually grateful for - a remarkable partnership with the British Pharmacological Society (BPS), which supports two curators of the database group based in the University of Edinburgh, with Pr Jamie Davies serving as the principal investigator. There are currently two other curators, supported by grants from the Wellcome Trust Foundation and education grants from IUPHAR member societies.

Symposia, Training and Conferences

Our document of the achievements from 2014-2018 lists the many symposia and meetings by the IUPHAR Sections and Subcommittees since 2014. The annual dues paid by the IUPHAR member societies have made these opportunities possible. This document also lists the impressive number of publications, nearly all from NC-IUPHAR published in Pharmacological Reviews, thanks to ASPET, and British Journal of Pharmacology, thanks to BPS. With BPS we also contribute to the Concise Guide to Pharmacology.

Clinical Pharmacology

In 2016 the Clinical Pharmacology Division established a series of Mentoring Centres to support the development of research and teaching in developing areas of the world. The division was chaired by Darrell Abernethy until his sad demise in 2017, with David Webb ensuring continuity. David LeCouteur is the new chair, aided by María Isabel Lucena, who are nominated to continue through 2022. We thank them. Caroline Samer and Nilima Kshirsagar have also been nominated as 2018-2022 Division officers. An important special subcommittee focusses on developing countries, where the new chair is Olayinka Ogunleye aided by Joseph Fadare. This is a critical activity supporting the network called Medicines Utilisation Research in Africa. A major effort of this initiative is through the organization of workshops. Olayinka and Joseph are an example of the success of the Clinical Pharmacology

Mentoring Centre in Stockholm, situated in the Karolinska Institutet, where they spent two weeks training with Lars Gustafsson the previous chair. They have established the Nigerian Society for Clinical Pharmacology & Therapeutics. We must acknowledge Lars for his outstanding leadership.
The Pharmacoepidemiology and Pharmacovigilance Subcommittee, previously led by Milou Drici, had organised workshops in India and Egypt. Nick Buckley is the 2018-2022 chair.

Pharmacology for Africa (Phar*f*A), is the constellation of African pharmacological societies. We have had, and will continue, quarterly teleconferences of the Phar*f*A management team, chaired by Douglas Oliver and administered by Makhotso Lekhooa. PharfA, in conjunction with the South African Society for Basic and Clinical Pharmacology, organised the 2016 All Africa Congress on Pharmacology and Pharmacy and will continue to organise these meetings.

Education.
Liz Davis has taken over as chair of the education section. A critical resource is the Pharmacology Education Project (PEP), chaired by John Szarek and Simon Maxwell, with Elena Faccenda as curator, in Edinburgh. PEP was heavily featured at WCP2018. This online learning resource supports education and training in the pharmacology for students of the biomedical sciences, medicine, nursing and pharmacy as well as those who teach them. The website was financed by ASPET and is currently financed via the Chinese, Japanese, Italian, and Hungarian pharmacology societies, to whom we express our gratitude. The website is free, and consultable at http://www.pharmacologyeducation.org – please contribute teaching materials at http://www.pharmacologyeducation.org/contribute-project.

IUPHAR promotes pharmacological training in developing countries and has supported the Integrative and Organ Systems Pharmacology training courses for animal use, emphasising the 3Rs. David Lewis (https://www.etris.leeds.ac.uk) held hands-on workshops in South Africa during 2014 and 2018 as well as China in 2016; future meetings will be in India and East Africa. Please email admin@IUPHAR.org if your society has an interest in hosting a workshop.

We wish to involve the pharmacology societies around the world even more.
How will we do this?

We used Skype, Zoom, telephone conferences, meeting dial-ins or YouTube videos in an experimental fashion during 2014-2018. Finally, we propose to use Zoom. It has been an overall success, so we propose to link IUPHAR scientists with member society meetings where we cannot have a direct presence because travel funds are very limited. If you would like to invite an IUPHAR representative at a pharmacology society meeting you are organising, please contact admin@IUPHAR.org so we may explore participation directly or by Zoom or teleconference.

We propose to have an ongoing discussion with the pharmacology societies as IUPHAR changes its procedures and governance over the next few months.

Finally, we must again thank Sam Enna, Lynn LeCount and Leigh Ann Arbuckle of the Kansas City IUPHAR Administrative Office. Sam has served two terms as secretary-general then as president for a total of 12 years. Lynn has been the principle 'on-the-ground' organiser and contact for IUPHAR during this time with Leigh Ann keeping track of the finances. Special thanks go to Petra Thürmann for her work as the treasurer for the last term, and during the transition period.

Michael Spedding	James Barrett	Kristen Kovach	Ingolf Cascorbi
IUPHAR Secretary General	IUPHAR treasurer	Executive Officer	President