

## NC-IUPHAR Activity Report

### October 2018 Edinburgh, UK

On October 1<sup>st</sup> and 2<sup>nd</sup> in Edinburgh, UK, we celebrated the launch of the Guide to Immunopharmacology. This freely-accessible database came as a result of Wellcome Trust funding to Prof Jamie Davies and a consortium of eight academics from Paris, Jerusalem, Cambridge, Melbourne, Edinburgh, Basel, and Nottingham. As part of this launch, a two-day focussed meeting was held with a select group of invitees, including Francesca Levi-Schaffer (Chair of ImmunPhar, the IUPHAR Immunopharmacology section) and Alberto Mantovani (President of the International Union of Immunological Societies). The 10 invited speakers provided a vast breadth of information on a variety of topics on the overlap between immunology and pharmacology. Professor Tracy Hussell of the University of Manchester delivered the Anthony Harmar Memorial Lecture on “Decision-making in lung immunity”.

The Edinburgh team of curators presented a summary of the Guide to Immunopharmacology. At the time of the meeting, the website listed over 540 targets and 1000 ligands; essentially these elements follow the format of our “traditional” records at the Guide to Pharmacology. Novel aspects introduced to the Guide to Immunopharmacology database include a hierarchy of immune cell types and immunological diseases. These are all inter-linked, with associations between ligands, targets, cell types and diseases.

Harding SD, Sharman JL, Faccenda E, Southan C, Pawson AJ, Ireland S, Gray AJG, Bruce L, Alexander SPH, Anderton S, Bryant C, Davenport AP, Doerig C, Fabbro D, Levi-Schaffer F, Spedding M, Davies JA and NC IUPHAR *Nucleic Acids Res* (2018) **46**: D1091-D1106 The IUPHAR/BPS Guide to PHARMACOLOGY in 2018: updates and expansion to encompass the new guide to IMMUNOPHARMACOLOGY <https://www.ncbi.nlm.nih.gov/pubmed/29149325>

### January 2019 Stockholm, Sweden

On January 24<sup>th</sup> and 25<sup>th</sup> in Stockholm, Sweden, an International Expert Workshop was held, sponsored by the Karolinska Institute and the Swedish Institute for Drug informatics. The workshop was entitled “User adapted knowledge bases and real world data in medicine and pharmacology: data acquisition, design, implementation and effects” with attendees from across Europe and the US. The group reflected on the best ways to present medical and pharmacological databases, as well as models of funding. During the meeting, Michael Spedding signed a Memorandum of Understanding between IUPHAR and the Karolinska Institute.

<https://ki.se/en/labmed/international-research-workshop-january-24-25-2019>

### April 2019 Paris, France

On April 26-28<sup>th</sup> in Paris, France, we held a meeting of NC-IUPHAR in conjunction with colleagues from the British Pharmacological Society, as well as guests from Servier Laboratories, who funded the meeting. Topics discussed during the meeting included Orphan G protein-coupled receptors, Adhesion GPCR, the use of nano-BRET in cell signalling, metabolomics and lipid sensing GPCR in inflammation, with guest speakers including David Gloriam, Ralf Jockers, Tobias Langerhan and Jess Dalli. In addition, many of our core members gave presentations on their work.

## Publications

Recent publications sponsored by NC-IUPHAR:

Read C, Nyimanu D, Williams TL, Huggins DJ, Sulentic P, Macrae RGC, Yang P, Glen RC, Maguire JJ, Davenport AP (2019) *Pharmacol Rev.* **71**:467-502 International Union of Basic and Clinical Pharmacology. CVII. Structure and Pharmacology of the Apelin Receptor with a Recommendation that Elabela/Toddler Is a Second Endogenous Peptide Ligand. <https://www.ncbi.nlm.nih.gov/pubmed/31492821>

Gada K, Plant LD (2019) *Br J Pharmacol* **176**:256-266 Two-pore domain potassium channels: emerging targets for novel analgesic drugs: IUPHAR Review 26. <https://www.ncbi.nlm.nih.gov/pubmed/30325008>

In anticipation of imminent publication is the 2019/20 update of the Concise Guide to Pharmacology. Published by Wiley on behalf of the BPS, the 490-page guide includes overviews of key properties for close to 1,700 human drug targets, identifies 3,500 ligands including more than 2,400 synthetic organic molecules and over 50 antibodies. Over 4,000 interactions between ligands and targets are quantified, allowing researchers to assess the potency of these interactions.

## Summary

We continue to collaborate with the IUPHAR Pharmacology Education Project (PEP) and the Medicines for Malaria Venture who have funded the [Guide to Malaria Pharmacology](#).

Full details of NC-IUPHAR membership and oversight committees, *Concise Guide to PHARMACOLOGY* contributors, and Database contributors and NC-IUPHAR subcommittee membership can be found [online](http://Guidetopharmacology.org) at [Guidetopharmacology.org](http://Guidetopharmacology.org)

**Steve Alexander**, Chair of NC-IUPHAR

## **Clinical Pharmacology Division Activity Report**

### **Activities during 2018**

- Support for educational activities/symposia were provided for Pharmacogenomics: Strategies for clinical implementation (Brazil), and for Clinical Pharmacology program for WCP2018 Kyoto (3 plenary and 5 symposia)
- New mentoring centers were developed at Stockholm, Geneva, Toronto and Sydney, that add to the list of centers at Edinburgh, Malaga, and Busan
- Support for maintaining IUPHAR representation to CIOMS
- Contribution of CD with articles for Pharmacology International and on social media
- Participation in a 2-day consultation on country implementation of the 3<sup>rd</sup> Global Patient safety challenge (“Medication without harm”) at WHO headquarter Geneva
- G. Mannaioni from the Italian Society of Pharmacology became new member of the CD

### **Activities conducted and planned for 2019**

- Governance: David Le Couteur stepped down and Caroline Samer has taken over as Chair of the CD. Matt Doogue has become Vice-chair
- Support for educational activities/workshop/symposia has been provided for “Prescribing Competency: Designing Online training Course” (CD IUPHAR & SAC ACCP in Mumbai), Geriatric clinical pharmacology: “informing medication without harm in old age” (CD IUPHAR symposium at the EACPT congress in Stockholm), and Sub-Committee for Global Health Pharmacology and Therapeutics Workshop on “Instigating Functional Drugs and Therapeutic Committee”, Nigeria
- Support for one week of symposia and workshops in China (Caroline Samer, Nilima Kshirsagar and David Webb) in Beijing and Kunming July 2019 hosted by the Chinese Pharmacological Society
- Participation in a one day symposium on the “Role of Clinical Pharmacology & Pharmacogenetics in Personalized medicine” (Hyderabad, Dec 3)
- Translation of the IUPHAR/WHO/CIOMS Clinical Pharmacology Manifesto to Russian completed (that adds to Korean and Japanese).
- Participation of CD IUPHAR in the CIOMS WG on DILI (MI Lucena). Guidance for publication next year. Exploring on a new IUPHAR-CIOMS WG on Traditional medicine
- Review and inputs on the “Medication safety curriculum guide” were sent to WHO
- Initial discussions to propose and support a symposium on the WHO “medication without harm” initiative for World Pharma 2022
- Technical input requested for two WHO documents (“Medication reconciliation” and “Perioperative Medication safety issues”)
- Establishment of the World Clinical Pharmacology Day, May 6<sup>th</sup> 2020 to give visibility and recognition. A tentative topic ‘Clinical Pharmacology for Better Medicines’
- World survey for collecting information on clinical pharmacology training programs in different regions worldwide will be distributed to all clinical pharmacological societies
- Increased social media visibility with the IUPHAR CS Twitter account (@iuphar\_clindiv)

**Caroline Samer**, Chair of Clinical Division

## Geriatric Pharmacology Activity Report

Geriatric pharmacology continues to be an area of increasing international interest as the global population ages. The three key action areas for the current WHO 3<sup>rd</sup> Global Patient Safety Challenge: Medication without harm (polypharmacy, high risk situations and transitions of care) are all highly relevant to older people and can be informed by geriatric clinical pharmacology.

The major activities of the geriatric pharmacology subcommittee in 2019 have been:

- (1) Increase membership. The existing members Prof Sarah Hilmer (chair, Australia), Prof Petra Thuermann (Germany) and Prof David Le Couteur (Australia) decided to broaden the membership to achieve better global representation and include an early career clinical pharmacologist. We are delighted that Prof Mirko Petrovic (Belgium), Prof Janet Schwartz (USA) and Dr Anna Renom Guiteras (Spain, early career) have agreed to join the subcommittee.
- (2) Publication of geriatric pharmacology curriculum for medical students. Kashyap M, Thuermann P, Le Couteur DG, Abernethy DR, Hilmer SN. IUPHAR International geriatric clinical pharmacology curriculum for medical students. *Pharmacol Res.* 2019 Mar;141:611-615. doi: 10.1016/j.phrs.2019.01.032. We mentored the first author, an early career post-doctoral pharmacist whose degrees were from India. Members have disseminated this within our networks, and we hope that it will be a useful resource to support the WHO 3<sup>rd</sup> global patient safety challenge: medication without harm, internationally.
- (3) Satellite Symposium at the EACPT Scientific Meeting, Stockholm, June 2019. Sarah Hilmer and Petra Thuermann presented a symposium entitled, 'Informing Medication Without Harm in Older Patients'. We highlighted the role of geriatric clinical pharmacology and IUPHAR in achieving the WHO 3<sup>rd</sup> global patient safety challenge. We took the opportunity to disseminate the IUPHAR geriatric pharmacology curriculum to leaders in clinical pharmacology from across Europe. Sarah highlighted the role of pharmacologically based tools such as Drug Burden Index, in clinical risk assessment of older patients. Petra showcased innovative ideas for rigorous clinical trial design in older people for both prescribing and deprescribing. We gratefully acknowledge funding from IUPHAR clinical division towards travel costs and registration to allow us to contribute to the EACPT meeting.

Our plans for 2020 are to engage our new members, further disseminate our curriculum, consider producing IUPHAR guidance on clinical trials in older adults and look for opportunities to build our mentoring program. We will investigate presenting an IUPHAR geriatric pharmacology symposium for a different audience.

**Pr Sarah Hilmer**, Chair, University of Sydney, Australia

## Global Health Pharmacology and Therapeutics Activity Report

### Activities (July 2018 – October 2019)

- **Continued support to MURIA** (Medicines Utilisation Research in Africa) Group and collaboration in MURIA activities. Co-organised 5<sup>th</sup> MURIA Workshop on Drug Utilisation Research in Africa held in Potchefstroom, South Africa between 9 and 11 July, 2019. Summary of 4<sup>th</sup> workshop published in Pharmacology International December 2018 edition, See <http://files.constantcontact.com/554aba26701/6a70a2e2-24c7-417c-ba92-af8252062290.pdf>
- Publications:
  - i. Reported needs of information resources, research tools, connectivity and infrastructure among African Pharmacological Scientists to improve future patient care and health, Expert Review of Clinical Pharmacology, 12:5, 481-489, DOI:10.1080/17512433.2019.1605903 (Lead Author: Olayinka Ogunleye)
  - ii. Drug and therapeutics committees in Nigeria: evaluation of scope and functionality, Expert Review of Clinical Pharmacology, DOI:10.1080/17512433.2018.1549488 (Lead Author: Joseph Fadare)
  - iii. Status of antimicrobial stewardship programs in Nigerian tertiary healthcare facilities; findings and implications. Global Antimicrobial Resistance, <https://doi.org/10.1016/j.jgar.2018.11.025> (Lead Author: Joseph Fadare)
- **Development of Good Practices of Drug Utilization studies in African and Latin American Countries.** Drs Ogunleye and Fadare are co-authors, project initiated by the International Society for Pharmacoepidemiology (ISPE). Submission of first Manuscript done
- **Collaborative Projects between IUPHAR and Karolinska Institutet Stockholm with SC**
  - i. **Karolinska Institute / IUPHAR first joint project meeting “Pharmacology Educational Programme for resource-strained countries”, 24th May, 2019**  
Institute of Experimental and Clinical Pharmacology, University of Kiel, Germany  
Attendees: Ingolf Cascorbi (IUPHAR, Kiel), Lars L Gustafsson (Karolinska Institute, Stockholm), Ruwen Böhm (Kiel), Charles Awortwe (Kiel)
  - ii. **2nd Karolinska Institute / IUPHAR workshop on “Pharmacology Educational Programme for resource-strained countries, Kiel, Germany, September 25-26, 2019.**  
Institute of Experimental and Clinical Pharmacology, UKSH Campus Kiel, Hospitalstr.  
Participants: Charles Awortwe (Kiel), Ruwen Böhm (Kiel), Ingolf Cascorbi (Kiel), Lars Gustafsson (Stockholm), Maria Hernandez (Kiel/Madrid), Olayinka Ogunleye (Lagos - joining by zoom), Leszek Wojnowski (Mainz),
- **Exploring Potential Opportunities for Open Science in Resource Strained Countries of Africa Building on Existing Collaborations.** A Skype Meeting Held on 4<sup>th</sup> July 2019 between Prof Lars L. Gustafsson (KI), Prof Simon JE Taylor (Brunel, UK) and Dr Olayinka Ogunleye (SC, Lagos)

### **Planned Activities**

- **Drugs and Therapeutic Committee Workshop in Nigeria. Sheraton Hotel, Lagos between 20 and 21 November, 2019.** IUPHAR (Central and CD) sponsoring 2 International Speakers (Lars Gustafsson and Jamie Coleman). Other collaborating organisations: WHO, Nigerian Society for Clinical Pharmacology and Therapeutics.

**Dr. Olayinka O. Ogunleye**, Lagos State University College of Medicine & Lagos State University Teaching Hospital. Ikeja GRA, Lagos, Nigeria.

## **Pharmacogenetics/genomics Section Activity Report**

### **IUPHAR-IUTOX Exchange Symposium (July 18, 2019; Honolulu)**

Following the successful IUTOX symposium held at the WCP2018 congress in Kyoto it was IUPHAR's turn to organise and hold a symposium at ICTXV2019 (co-hosted by SOT) at the Hawaii Convention Center. IUPHAR charged the Pharmacogenetics and Pharmacogenomics Section to organise the symposium which was done in collaboration with the Drug Metabolism and Drug Transport Section chaired by Prof Matthias Schwab. The title of the stand-alone symposium "Precision Medicine and ADME-Targets" and was chaired by Andrew Somogyi. A more detailed report plus photographs is included elsewhere in Pharmacology International.

### **IUPHAR Support for symposium at 15<sup>th</sup> European ISSX (International Society for the Study of Xenobiotics) -14<sup>th</sup> EACPT (European Association for Clinical Pharmacology and Therapeutics) Meeting in Geneva (June 7-10, 2020).**

This is being co-ordinated by Prof Ann Daly (Vice Chair Pharmacogenetics and Pharmacogenomics Section). The title of the symposium is "Implementation of Pharmacogenomic testing" and is a joint symposium with IUPHAR which is providing travel support for the speaker from Africa.

The Section is considering a joint symposium at the Asia-Pacific ISSX meeting in Bangalore for 2021.

Discussion will be underway very shortly as to how the Section can provide strong support and be involved in international studies addressing Serious Adverse Drug Reactions which to date have been very much at a national level, when what is desperately needed is at an international level including contributions from developed, developing and underdeveloped nations from all continents (except Antarctica).

**Andrew Somogyi** (Chair- Pharmacogenetics and Pharmacogenomics Section)

## Membership Committee Activity Report

Members: John Miners (Australia) – Chair, Jeffrey Aronson (United Kingdom), Diadelis Figuero (Cuba), Sinem Ezgi Gulmez (Turkey), Douglas Oliver (South Africa).

The responsibilities of the Membership Committee, as specified in the Statutes, are to “study, investigate and report to the Executive Committee on applications for membership of IUPHAR in its various categories, proposals for the establishment of Sections or Divisions, or proposed actions for the de-affiliation and withdrawal from IUPHAR”.

The current Committee held its first meeting (via Zoom) in March. A number of initiatives were discussed to broaden the remit of the Committee, including: identify current non-member pharmacology societies for potential membership of IUPHAR; be proactive in expanding the influence of pharmacology; and identify organisations that may benefit from collaboration with IUPHAR (and vice versa). It was noted that these broader responsibilities would presumably require a change in the Statutes.

Activities since the meeting in March include:

- Approval of an application from the International Regulatory Peptide Society (IRPS) for Associate Membership of IUPHAR. The application from the IRPS satisfied the requirements for Associate Membership. The Committee noted that peptide drugs and peptide translation are highly relevant to IUPHAR and there is potentially significant benefit to be had from having the IRPS as a member.
- JM has been in contact with a number of pharmacology-related groups in Southeast Asia with respect to membership of IUPHAR. Critical mass is a significant issue and formation of a regional grouping (similar to the Pharmacology for Africa initiative) may be an alternative option. In addition, concerns were raised with respect to paying the annual dues to IUPHAR (even in the Benefactor category).
- Similar difficulties were encountered by DF in her negotiations to join the Colombian Society of Pharmacology.
- The Membership Committee in its March meeting recommended that the Executive Committee consider establishing a fund to support the membership of societies from developing countries. It was suggested that the fund could be financed by donations from larger national pharmacological societies.

**John Miners**, Matthew Flinders Distinguished Professor, Flinders University, Australia



## Drug Metabolism and Drug Transport Section Activity Report

### Activities in 2019

- **IUPHAR Symposium (symposium 13) at 27 February 2019 with the IUPHAR *Drug Metabolism and Drug Transport* Section at 4th GERMAN PHARM-TOX SUMMIT, Stuttgart, Germany, February 25-28, 2019):** The organizer of the symposium was Professor Matthias Schwab and the symposium addressed topics covering Drug Metabolism and Drug Transport and pharmacogenomics issues. Chairs of the symposium were the IUPHAR president Prof. I. Cascorbi (Kiel, Germany) and the past-chair of the Drug metabolism and Drug transport section Prof. A. K. Daly (Newcastle, UK) who was also speaker. Additional invited speakers included Prof. C. Rodríguez-Antona (Madrid, Spain) and Dr. Ruwen Böhm (Kiel, Germany).
- **Following the successful IUTOX symposium held at the WCP2018 congress in Kyoto a joint symposium of the IUPHAR subsections *Pharmacogenetics and Pharmacogenomics* (chair Prof. Andrew Somogyi) and *Drug Metabolism and Drug Transport* (chair Prof Matthias Schwab) was presented at ICTXV2019 (co-hosted by SOT) at the Hawaii Convention Center, Honolulu, Hawaii, USA, July 15–18, 2019.** The title of the stand-alone symposium “Precision Medicine and ADME-Targets” and was chaired by Prof. Andrew Somogyi (Adelaide, Australia) who was also speaker at the symposium. Additional invited speakers included Assoc.-Prof. Nuala Helsby (University of Auckland, New Zealand), Professor Bhagwat Prasad (University of Washington, USA) and Prof. Deanna Kroetz (San Francisco, USA).
- Assoc.-Prof. Nuala Helsby was involved in the update of the IUPHAR/BPS Guide to Pharmacology (Cytochrome P450, version 2019.4, in the IUPHAR/BPS Guide to Pharmacology Database)
- **The Chair (Prof. Matthias Schwab) and past-chair (Prof. Ann Daly) of the IUPHAR *Drug Metabolism and Drug Transport* Section are organizers of the International Conference *Personalized and Precision Medicine PEMED 2020, February 19-21, Munich, Germany* (<https://premc.org/conferences/pemed-personalized-precision-medicine/>). The meeting covers issues related to diagnostics, bioinformatics, drug discovery, and therapies including ADME and pharmacogenomics with the aim of translating precision medicine into direct improvements in health care.**
- **Publication strategy for the section proposed.** This includes widespread dissemination of all content presented at symposia organised or co-organised by the section by electronic means, continuing to contribute to NC-IUPHAR in areas relevant to the section and to future NC-IUPHAR publications in those areas as well as providing occasional updates on the section's activities to Pharmacology International.

### **Proposed Activities for 2020**

- Continue to develop proposals for contributions to meetings including national European meetings and the WCP 2022 - 19th World Congress of Basic & Clinical Pharmacology, Glasgow, Scotland.
- Contribution to the activities to establish a Global Pharmacogenomics Network with strong involvement of ADME topics.

**Professor Matthias Schwab and Dr. Margarete Fischer-Bosch** Institute of Clinical Pharmacology, Stuttgart, Germany

## Integrative and Organ Systems Pharmacology Sub-Committee Activity Report

Another busy and extremely successful 18 months. Focus has been on development of partnerships and networks, particularly animal welfare organisations, fundraising, delivery of activities/course in new countries/continents, increased focus on Continuing Professional Development.

### Activities

- Created and delivered three Train the Trainer courses (1x India, 2x Africa)
  - *Developing and sustaining India's capacity for pre-clinical Drug Discovery: "Train the Trainer" course for CPD in lab animal sci for early career researchers.* 5 days, July 2019. 40 participants. **Funder: UKIERI.** Co-organised with D Kumar (NIN, Hyderabad) & Indian Pharmacol Soc. IMCR National Institute of Nutrition, Hyderabad, India.
  - *Current international good practice in the care and use of laboratory rodents & Establishing Guidelines for Animal Ethics Committees in Africa.* 5 days. March 2019, 42 participants from 14 Countries. **Funder: RCUK GCRF Global Impact Accelerator Award.** Co-organised with O Souileman (ENMV Sid Thabet), T Fourie (SAALAS) & B Mohr (Univ Cape Town/SAALAS). École Nationale de Médecine Vétérinaire, Tunisia.
  - *Current international best practice in the care and use of rodents and rabbits: A CPD workshop for LAS vets and para-vets.* 5 days, May 2018, 37 participants. **Funder: Univ of Leeds HEFCE GCRF.** Co-organised with T Fourie (SAALAS) & B Mohr (Univ Cape Town/SAALAS). Univ of the Witwatersrand, South Africa.
- All educational resources created shared with participants as open educational resources. All IUPHAR badged. Will be uploaded onto ETRIS ([www.etriss.leeds.ac.uk](http://www.etriss.leeds.ac.uk)), my lab animal educational resource repository or a new one created specifically for purpose in 2020
- Co-led the development of the first guidelines, for Africans by Africans, for the establishment and functioning of animal ethics committees (IACUC's) in Africa. Partnership with B Mohr (Univ Cape Town/SAALAS), O Souileman (ENMV, Tunisia), ICLAS and Pan African Network of Lab Animal Sciences and Ethics (PAN-LASE). Available at: <https://www.saalas.org/guidelines-for-animal-ethics-committees-iacucs-in-africa/>
- Educational Consultant to EU Joint Research Centre project developing lab animal 3Rs educational resources for use in Higher Education. Contracted to write 3Rs Learning Outcomes.
- Member EU Education & Training Platform in Lab Animal Sci (ETPLAS) working group expanding pan-EU Learning Outcomes framework for mandatory introductory training for lab animal researchers
- Visiting Lecturer, Karolinska Institutet, Sweden. Contribute to deliver of lab animal sci component of MSc Toxicology & MSc Biomedicine programmes. **Funder: ERASMUS**
- Discovering, evaluating and disseminating non-animal educational resources for education and hands-on learning in lab animal sciences and in-vitro pharmacology. **Funder: Brit Pharmacol Soc Teaching Award.**

- Delivered workshop on Reproducibility and Reliability of animal studies at Brit Pharmacol Soc Pharmacology 2018.
- Two publications arisen from this work, invited speaker at 4 organisations/conferences. Also disseminated via 6 conference presentations.
  - Lewis DI** (2019). Animal Experimentation: Implementation and application of the 3Rs. Emerging Topics in Life Sciences (In press). Available at: <https://doi.org/10.1042/ETLS20190061>
  - Lewis DI**, Patel BK, Kumar BD, Medhi B (2018). Developing and sustaining India's capacity for preclinical drug discovery. *Indian Journal of Pharmacology*, **50**(5), p225.

### Activities planned for 2020

- Train the Trainer CPD course for all involved in care & use of lab animals, Cairo Univ, Egypt. March 2020. Funded.
- Train the Trainer CPD course established researchers, NIN Hyderabad, India. Early 2020. Funded
- Development of Pan African Network of Lab Animal Sciences and Ethics initiative. Activities in 7 African countries. Dependent on successful funding. Increased collaboration & engagement with PharFA.
- **Executive Committee members are invited to consider whether they, their organisation or individual Institutions would like to partner with me in developing and delivering ISOP activities and/or Train the Trainer courses in their country, regions or Institutions, and to contact me ([d.i.lewis@leeds.ac.uk](mailto:d.i.lewis@leeds.ac.uk)) to explore these possibilities.**
- Further development of ETRIS ([www.etriss.leeds.ac.uk](http://www.etriss.leeds.ac.uk)), **Executive Committee members are invited to link to it from their national/regional society webpages** and to encourage their member's Institutions to do likewise

I gratefully acknowledge the support of colleagues in Africa, India, IPS, BPS, IUPHAR and Prof Spedding without whom the above would not have been possible. I look forward to working with them all in 2020, and expanding this relationship to working with other members of the IUPHAR-Exec members and their national/regional organisations

**Dave Lewis ([d.i.lewis@leeds.ac.uk](mailto:d.i.lewis@leeds.ac.uk))**, IOSP Chair, University of Leeds, UK

## **Pharmacology Education Project Activity Report**

### **Activities held September 2018 – October 2019**

- There were more than 20,000 new sessions for the month of October 2019 compared to about 15,000 at the end of October 2018 and 5000 at the end of October 2017. Referrals continue to come from Guide to Pharmacology and IUPHAR.
- The analytics from our Slideshare account show more than 12,600 views year-to-date and over 500 actions since October 2018 emphasizing that users are finding and using the information that is linked to PEP.
- This year a survey was embedded on the webpage. Twenty-five responses have been received from 15 countries to date. Half the responders identified themselves as learners and half as faculty. The amount of content was rated as Excellent (14) or fair (10); 18 rated the quality of the content as Excellent, 6 as Fair, and 1 as Poor; 19 rated the site as easy to navigate, 4 moderately easy and 2 difficult. Overall, the response to the PEP website is very positive and attests to the value of the resource.
- Meetings since last report: Four board meetings held December 2018, and March, June, and September 2019. Monthly management team (Drs. Szarek, Maxwell, Faccenda) meetings held November 2018, and March, May and August 2019.
- Presentations: Manuscript published Clinical Pharmacology and Therapeutics, The IUPHAR Pharmacology Education Project, Vol 105(1), Jan 2019. The board member representing the Japanese Pharmacological Society made a presentation on PEP at their annual meeting; An abstract was accepted for presentation at the annual meeting of the Australian Society of Experimental Pharmacologists and Toxicologists in New Zealand this November 2019.
- Marketing: An email message introducing PEP and inviting participation together with a flyer was made available to all board members to distribute. Regular tweets are posted on Twitter.
- Content and website: New content was added through external submissions. Creative Commons icon and link, and a link to the Sponsors list have been added to the footer on the site pages.

### **Activities planned November 2019 – October 2020**

- Marketing: The email message and flyer mentioned above will be sent to other groups and individuals; Additionally, notifications will be requested in pharmacology society newsletters and publications. Twitter will be used to enhance visibility of the site.
- Content: Content will continue to be added and reviewed. Content will be solicited from the pharmacology community at-large. Contacts have been established with the AMSPC leadership to explore collaboration through the AMSPC Knowledge Objectives. Explore stronger collaboration with IUPHAR Education Section.
- Use: Google analytics will be used to monitor use of the site.
- Meetings: Quarterly board meetings and monthly management team meetings will be held to review analytic data and submissions.

- Members of IUPHAR committees and sections are encouraged to use and publicize the website, [www.pharmacologyeducation.org](http://www.pharmacologyeducation.org) and follow PEP on twitter, @PharmacologyEd.

### **Fundraising efforts**

Annual contributions from the Pharmacological Societies of China, Japan and Hungary were made. Discussions have occurred between the and PEP leadership regarding funding. A survey has been developed to send to societies. A 3-year progress report on PEP and plans for the future will be provided with the survey. The future of PEP depends on funding, primarily for a curator.

**John Szarek, Simon Maxwell and Elena Faccenda**

## **Gastro-Intestinal Section Activity Report**

The section is in progress of the preparation of the 11th International Symposium on Cell/Tissue Injury & on Cytoprotecting/Organoprotection (ISCTICO), the main scientific event of the IUPHAR GI Section (The 10th was held in Kyoto, as the satellite meeting of WCP). The Symposium will be held at the University of Pecs Medical School, Pecs Hungary, October 7-10, 2020.

In addition, also in preparation for 2020 in July, is the next Summer School on Stress, and the program is put together by the Selye International Institute for Advanced Studies with the IUPHAR GI Section.

### **Prof. Dr. Klara Gyires M.D. D.Sc.**

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## ImmuPhar Section Activity Report

- The strategic agreement with the International Union of Immunology (IUIS) is bearing fruit. First the [guidetoimmunopharmacology.org](http://guidetoimmunopharmacology.org) is seen as a key knowledge resource and database for IUPHAR, and secondly, the Pharmacology Education Project (PEP) links seamlessly across to Immunopaedia, <https://www.pharmacologyeducation.org/pharmacology/immunopharmacology>, thus incorporating all the background on the immune system.
- ImuPhar Chair F. Levi-Schaffer participated in and gave keynote lecture at European Histamine and Respiratory Society annual meeting in Krakow, Poland, May 2019
- ImmuPhar Chair F. Levi-Schaffer participated in and gave the opening lecture at the 39<sup>th</sup> Spanish Society of Pharmacology in Las Palmas, July 2019. She was invited as a representative of ImmuPhar Section/IUPHAR.
- ImuPhar Chair F. Levi-Schaffer to participate and give a lecture at 5<sup>th</sup> IUPHAR World Conference on the Pharmacology of Natural Products in Hyderabad, India, December 5-7, 2019
- ExComm member M. Ishii submitted review article to *Pharmacology & Therapeutics* with acknowledgement to Section.
- Section's COST Action Proposal was not approved
- FLS agreed to coordinate better interactions among different IUPHAR sections. To carry out this task she agreed to coordinate a once every two months TC with Section chairs or their designated representatives.
- Young Investigators Committee (YIC) of ImmuPhar Section:
  - Establishment of Committee approved by ImmuPhar ExComm. Initial members Hong Yong Peh (Chair), Daniel Tan, Luciana Taveres, Hadas Pahima
  - Twitter page for ImmuPhar was set up and is running. It is accessible at: <https://twitter.com/immuphar> (Luciana Taveres is managing the page)
  - New IUPHAR website: Hong Yong Peh is managing the page for the Section.
  - Reviews to be prepared by YIC members on following topics in the order listed:
    1. Immunopharmacology of airways (to be submitted to *Pharmacological Research*)
    2. Natural products & immunopharmacology (Asking the Natural Products Section to collaborate) (Perhaps for submission to *Pharmacology & Therapeutics* if done in collaboration with Natural Products Section)
  - First teleconference call held by committee.
  - Instagram account set up and managed by Hadas Pahima
  - Facebook page of Section is now managed by Luciana Taveres
  - Long-term goal of the YIC Committee is to organize training seminars, conferences and summer schools on various topics of immunopharmacology

**Prof. Francesca Levi-Schaffer**, PharmD, PhD, Isaac and Myrna Kaye Chair in Immunopharmacology  
Institute for Drug Research, School of Pharmacy, Faculty of Medicine, The Hebrew University of Jerusalem,  
Jerusalem 91120, Israel



## ImmuPhar Young Investigators Committee Section Activity Report

### Activities July 2019 - October 2019

1. The Young Investigators Committee (YIC) of ImmuPhar section was established in July 2019  
Initial members (appointments till September 2022):
  - Hong Yong Peh (Chair)
  - Daniel Tan (member)
  - Luciana Tavares (member)
  - Hadas Pahima (member)
2. An online section website within the IUPHAR website was further developed and updated.
3. Ongoing operation:  
*Facebook* (<https://www.facebook.com/immunopharmacology/>) [373 total page likes]  
*LinkedIn* (<https://www.linkedin.com/groups/7484359/>) [106 members]
4. The *Twitter* page was setup and it is accessible at: <https://twitter.com/immuphar> [23 followers]
5. Collaboration with NC-IUPHAR: The Section is contributing to the areas of antibodies and immunopharmacology in general.
6. Collaborations with: 1) Natural products section of IUPHAR to write a review together; 2) IUPHAR Young Investigators to have synergistic efforts to promote pharmacology worldwide and further recruit more young investigators to join
7. There will be three reviews to be prepared by YIC on the following topics as shown:
  - i. Immunopharmacology of granulocytes in the airways (to be submitted to *Pharmacological Research*)
  - ii. To define natural products and its immunopharmacological effects (seeking Natural Products section of IUPHAR to collaborate) (planned submission to *Pharmacology & Therapeutics*)
  - iii. A review on natural products of Tibet and its immunopharmacological effects (to promote exposure of third world countries, and we start-off with Tibet first)
8. Held the first zoom meeting with the committee on October 3, 2019, at 7am EST.

### Future Activities planned

1. Continued bi-monthly zoom meetings with the committee to provide updates to council members, discuss new matters/events, and foster camaraderie among the committee members.
2. In the near future, we were thinking of setting up a mini-podcast series where established scientists are given questions (both raised by the committee as well as other immunopharmacologists) and they can answer in the podcast (audio and/or video) - be it questions to update the field, or even simply their life journey as a scientists and how they overcame obstacles to get to where they are. We thought this would inspire and attract other immunopharmacologists to follow us on our social media platforms.
3. Our long-term goal would be to organize training seminars on popular research techniques, summer schools on various topics of immunopharmacology, and eventually organize a conference on immunopharmacology.

by Dr. Hong Yong Peh, ImmuPhar YIC Chair  
for Prof. Francesca Levi-Schaffer, ImmuPhar Chair  
October 2019

## Pharmacology of Natural Products Section (PNPS) Activity Report

### Activities held June 2018 – December 2019

- The 18<sup>th</sup> World Congress of Basic and Clinical Pharmacology (WCP2018) was held in Kyoto, Japan on July 1-6, 2018. Prof. Yongxiang Zhang, the President of PNPS, was invited to give the cutting-edge lecture of Pharmacological Action and Mechanism of Traditional Chinese Medicine on behalf of PNPS. A themed platform of Natural Medicine and Traditional East Asian Medicines was set in the program, in which four symposia were included: Pharmacological Investigation in New Drug Discovery, Network Pharmacology, Globalization of traditional Asian Medicine, and Ameliorating Effects of Traditional Chinese Medicine on Ischemia/ Reperfusion-induced Cerebral Microcirculatory Disturbances and Neuron Damage. 16 speeches were given on the symposia.
- A PNPS working meeting was held on July 6<sup>th</sup> during WCP2018. Prof. Ingolf Cascorbi, the IUPHAR President (2018-2022), and Prof. Michael Spedding, IUPHAR Secretary-General, were also invited to participate. Prof. Yongxiang Zhang summarized the main activities of the section in the past four years. This presentation was then invited to be presented on the following IUPHAR Executive Committee Meeting. A new Executive Board of PNPS was nominated by the Nominating Committee composed of Profs. Yongxiang Zhang (chair), S J Enna, and Zhibin Lin, and approved on the meeting. Prof. Valérie Schini-Kerth in the University of Strasbourg, France was elected as the Chair of PNPS. Executive Board IUPHAR PNPS (2018-2022) is composed of:
  - Chair: Valerie Schini-Kerth, France
  - Vice-Chair: Guanhua Du, China
  - Secretary-General: Wenxia Zhou, China
  - Councilor / Membership Committee Chair: Fred WS Wong, Singapore
  - Councilor / Membership Committee Member: Thomas Efferth, Germany
  - Councilor / Membership Committee Member: Alejandro Mayer, USA
  - Councilor: Dinesh Kumar Bharadwaj, India
  - Councilor: Cherry Wainwright, UK
- As agreed in Aberdeen, UK in 2017, the 5<sup>th</sup> IUPHAR World Conference on the Pharmacology of Natural Products was held in Hyderabad, India in December 4-7, 2019. Prof. Michael Spedding contributed to the preparation of the conference. Prof. Dinesh Kumar Bharatraj has made great efforts to provide necessary facilitations to all international attendees. The conference was a major success and a full report will be available in the June issue of Pharmacology International. A section meeting will also be held during the conference to discuss the development of the Section.

**Valérie Schini-Kerth**, Chair of the Pharmacology of Natural Product Section of IUPHAR

## **Paediatric Clinical Pharmacology Section Activity Report 2018 - 2019**

### **Executive Committee of the Paediatric Section for the term 2018-2022:**

Chairman: Facundo Garcia-Bournissen (Argentina/Canada)  
Vice-Chair: Karel Allegaert (Belgium)  
Secretary: Zhiping Li (China)  
Treasurer: Pierre Gressens (France)  
Members: Steve Leeder (USA), Bruce Carleton (Canada)

The executive committee met during the 2019 European Society for Developmental, Perinatal and Pediatric Pharmacology (ESDPPP) meeting in Basel, Switzerland. The Committee also regularly communicates via email.

### **Activities during 2018 – 2019**

- Due to the way the original bylaws of IUPHAR Pediatric Clinical Pharmacology were written, virtually all of the previous Executive Committee members had their terms expire in 2018. This meant that a completely new Executive Committee had to be put together, and this has taken time to organize, given the limited number of pediatric clinical pharmacologists available.
- The difficulty with the bylaws is being addressed and they will probably be changed to allow for terms to expire in a more staggered way that will allow less sudden transitions in the future.
- The new Committee has incorporated 5 new members (Dr Karel Allegaert as Vice-Chair, Dr Zhiping Li as Secretary, Dr Pierre Griessens as Treasurer, Dr Steve Leeder and Dr Bruce Carleton). Two positions remain to be filled, but the Committee is working on that at the moment.
- During the ESDPPP meeting, informal and formal exchanges took place among members of the committee that led to expansion of the members at the time, and exploring the interest of potential new members. These exchanges continue and we expect that they will conduce to new junior researchers joining the committee soon.
- The Members of the Executive Committee participated during the 2018 – 2019 period in a number of activities related to the mandate of the Pediatric Clinical Pharmacology Section, including collaborating in the organization of ESDPPP and being part of ESDPPP council (Dr Allegaert), providing advice to international organizations (e.g. DNDi, PAHO) on drug development for pediatric neglected diseases (Dr Garcia-Bournissen), delivering lectures on pediatric and neonatal pharmacology (Dr Allegaert, Dr Garcia Bournissen, Dr Carleton, Dr Leeder, Dr Li, Dr Greesens), organizing pediatric clinical pharmacology teaching activities for junior researchers, pediatric and pharmacy residents and students (Dr Li, Dr Allegaert, Dr Garcia Bournissen, Dr Carleton), participating in pediatric clinical pharmacology advocacy activities both at national and international level (Dr Allegaert, Dr Carleton, Dr Li, Dr Garcia Bournissen, Dr Leeder, Dr Greesens) and carrying out pediatric clinical pharmacology research (all members of the Executive Committee).
- The Executive Committee has held informal discussions exploring the possibility to re-launch dissemination activities that will help reach new potential members for the Section and kindle the interest on pediatric clinical pharmacology in junior researchers and clinicians. A previous model (GRiP-funded pediatric clinical pharmacology courses) that was successful and involved significant participation of former members of the Section may be a good example for future effort, especially in developing regions. Dr Li has mentioned that there may be interest for such a course / seminar

series in China. Previous efforts in Latin America and in India were quite successful and, if funding is secured, could be repeated.

### **Activities planned for 2019-2020**

- Recruit new members to complete the Executive Committee
- Review and update Section website to encourage interaction with and among Pediatric Clinical Pharmacology Section members
- Continue to explore outreach opportunities to disseminate pediatric clinical pharmacology knowledge and encourage junior researchers and clinicians to interact with IUPHAR and the Section members
- Continue and expand advocacy for training in Pediatric Clinical Pharmacology across both the developed and developing world
- Continue to provide support for rational medicines use in children, and to push for pediatric-specific drug development, both in the developing and the developed world
- Participate and contribute to discussions on medication costs and effectiveness from a pediatric perspective
- Contribute to the planning and organization of future pediatric clinical pharmacology events (e.g. ESDPPP 2021) and explore possibly pediatric clinical pharmacology topics to include in IUPHAR meetings.

### **Facundo Garcia-Bournissen, MD PhD**

Clinician Researcher & Chairman of the Section of Paediatric Clinical Pharmacology  
Associate Professor, Department of Paediatrics,  
Schulich School of Medicine and Dentistry  
Western University. London, Ontario, Canada

## **IUPHAR Early Career Investigator Subcommittee Activity Report**

The IUPHAR ECI subcommittee has met via Zoom teleconference over the past year on a bi-monthly basis. The initial works of the subcommittee have been in establishing the objectives and defining the scope of the sub-committee, making tentative links with other early career investigator groups, working with the IUPHAR secretariat to develop a social media plan and working on planning future activities.

During the year the subcommittee has undergone a name change from the IUPHAR Young Investigator subcommittee to the IUPHAR Early Career Investigator subcommittee. This was in response to feedback that the early career terminology is more inclusive and more accurately reflects the pharmacologist group that the subcommittee is representing. The subcommittee has also developed a governance document to guide the subcommittee's objectives into future and now has a visible presence of the new IUPHAR website.

A major objective of the subcommittee is to highlight the activities of IUPAHR on social media. To this end the subcommittee has, in collaboration with the IUPAHR secretariat, developed a social media plan which has led to an increased the number of social media posts on Twitter and Facebook as well as an increase in the number of followers across both platforms. Work to increase IUPHAR's presence on LinkedIn is ongoing. The subcommittee is also looking into creating more social media 'postable' items in the form of an Early career investigator blog which hopes to be a source of information and of items of interest/importance to early career investigators. The subcommittee is also looking at ways to develop methods to effectively collect content about IUPHAR's activities so that can be posted on social media in an efficient and timely manner.

A major activity of the subcommittee this year has been the creation and deployment of a survey asking early career pharmacologists what their priorities and needs are. The survey ran for 3 months resulting in ~150 responses from ~20 countries. The results of this survey were collated and have been used to develop the objectives for the subcommittee. A number of areas of priority were identified in the survey, principle amongst these were ensuring more opportunities for early career investigators at the IUPHAR conferences and an apparent lack of visibility of some IUPHARs activities. To address these points the subcommittee is looking into organising an early career investigator satellite symposium at the next IUPHAR WPC and is planning to develop a social media 'campaign' to describe explain the activities of IUPHAR.

**Carl White**, Chair of the Early Career Investigators Subcommittee of IUPHAR

## IUPHAR Editor's Report November 2019

### Activities January, 2018 – November, 2019

#### NC-IUPHAR Publications

- The IUPHAR/BPS Guide to Pharmacology in 2018: updates and expansion to encompass the new guide to immunopharmacology. *Nucleic Acids Res.* 2018; 46:D1091-D1106.
- Accessing Expert-Curated Pharmacological Data in the IUPHAR/BPS Guide to Pharmacology. *Curr Protoc Bioinformatics.* 2018; 61:1.34.1-1.34.46.
- Challenges of Connecting Chemistry to Pharmacology: Perspectives from Curating the IUPHAR/BPS Guide to Pharmacology, *ACS Omega.* 2018; 3:8408-8420
- The Concise Guide to Pharmacology 2017/18: *Br J. Pharmacol.*:174, Dec. 2017.

#### *Pharmacological Reviews*

- 5- Manuscripts published
- 2- Manuscripts currently under review
- 8- Manuscripts in the pipeline

#### *British Journal of Pharmacology*

- 1- IUPHAR Reviews published
- 2- Manuscript currently under review
- 3- Manuscripts in the pipeline

#### IUPHAR Publications

- IUPHAR International Geriatric Clinical Pharmacology Curriculum for Medical Students. Kashyap et al., *Pharmacol Res.* 2019; 141:611-615.
- The IUPHAR Pharmacology Education Project. Faccenda E, Maxwell S, Szarek JL. *Clin Pharmacol Ther.* 2019; 105:45-48.
- Conference Report: Pharmacogenomics in Special Populations at WCP2018. Suarez-Kurtz et al. *Br J Clin Pharmacol.* 2019; 85:467-475.
- Joint ICMAN and IUPHAR Natural Products Section Meeting. Aberdeen UK 27-29th September 2017. Zhang et al., *Biochem Pharmacol.* 2017 ; 139:1-2.

#### IUPHAR Pipeline

- Academic Drug Development Collaboration with Karolinska Institute
- Collaboration with *Pharmacological Research* and IUPHAR

### Activities planned November 2019 – November, 2020

Continue working with NC-IUPHAR, IUPHAR Sections/Divisions and IUPHAR Exec to publish IUPHAR-sponsored publications.

**Eliot Ohlstein** IUPHAR Editor's Report

*Pharmacology of Natural Products Meeting in Hyderabad, India, December 2019*

