



Pre-Conference Workshop on Natural Product Screening and Libraries

Wednesday 4th December 2019

PROGRAMME

9.00-9.15	Welcome and Introduction <i>Professor Cherry Wainwright, Robert Gordon University, Scotland UK</i>
SESSION 1 – Managing Natural Product Libraries Chair – Professor David Adelson, University of Adelaide, Australia	
9.30-10.30	The NCI Program for Natural Products Discovery <i>Dr Tanja Grkovic, Frederick National Laboratory for Cancer Research, NIH, USA</i>
10.30-11.00	TEA BREAK
11.00-11.30	The Strathclyde Natural Products Library <i>Professor Cherry Wainwright, Robert Gordon University, UK</i>
11.30-12.15	Are Conventional Toxicity Studies Necessary for Botanicals with Traditional Knowledge; Case Studies. <i>Dr DB Anantha Narayana, Ayurvedye Trust, Bangalore, India</i>
12.15-12.30	Natural Product Collections for screening – Opportunities and challenges. <i>Dr Denis Barron, Nestlé Institute of Health Sciences</i>
12.30-1.30	LUNCH
SESSION 2 – Natural Product Screening in the 21st Century Chair – Professor Tanja Grkovic, NIH, USA	
1.30-2.30	Cell-based assays for complex mixtures <i>Professor David Adelson, University of Adelaide, Australia</i>
2.30-3.00	Bioactivity of a library of sub-fractions of red wine extracts <i>Professor Valerie Schini-Kerth, University of Strasbourg, France</i>
3.00-3.30	Overview of screening platforms for Natural Product Drug Discovery <i>Professor Cherry Wainwright, Robert Gordon University, UK</i>
3.30-4.00	TEA BREAK
4.00-4.45	Good Practice for high quality natural product publications <i>Professor Amrita Alhuwalia, William Harvey Research Institute, London, UK and Editor-in-Chief, British Journal of Pharmacology</i>
4.45-5.30	Panel Discussion with Questions - Identification of key issues for NP Research

World Congress on the Pharmacology of Natural Products
Pre-Conference Workshop on Natural Product Screening and Libraries.

Speakers and Topics:

Prof. Cherry Wainwright, Robert Gordon University, Scotland, UK

Professor Wainwright will provide an overview of some of the technology platforms that are now available for medium- to high-throughput screening of natural product extracts and purified compounds for biological activity. Systems that will be highlighted will include the Corning Epic System for label-free cell-based screening (<https://www.youtube.com/watch?v=tY4S9x04aW8>) and the Agilent Seahorse (<https://www.agilent.com/en/products/cell-analysis/how-seahorse-xf-analyzers-work>) for measurement of energy metabolism. In a second talk she will provide an overview of the Strathclyde Natural products library, which consists of ~6,000 crude plant extracts from plants representing ~95% of all plant species.

Prof. David Adelson, University of Adelaide, Australia

Prof Adelson will describe how to use a cell-based assay with a phenotype that can be quantified, and where the phenotype resulting from treatment with mixtures of compounds can be correlated with differentially expressed genes determined by transcriptome profiling. Fractionation of the mixture to remove either single or multiple compounds can then be used to identify compounds responsible for major effects/interactions. Statistically significant interactions between compounds or mixtures of compounds can also be characterised using a novel method we have developed that uses overall network perturbation based on gene expression data. These methods allow us to identify critical target genetic/metabolic networks affected by the mixture of interest.

Dr Tanja Grkovic, Frederick National Laboratory for Cancer Research, NIH, USA

Dr Grkovic will present on the generation of prefractionated natural product libraries for high throughput screening. The NCI Program for Natural Products Discovery (NPNPD) is a newly launched, priority program for the NCI. The new initiative aims to generate pre-fractionated extracts (up to 1,000,000) for modern high-throughput targeted screening technologies and develop integrated analytical resources for the isolation and structure elucidation of biologically active natural products. Development of high-throughput, high-capacity and fully automated methodology towards the generation of the prefractionated library as well as rapid isolation and identification of the active principles will be presented.

Dr D.B Anantha Naryana, CSO, Ayurvedye Trust, Bangalore, India

Dr Naranyana will describe how the emerging growth of the use of botanicals as supplements, nutraceuticals and as botanical drugs has brought the aspect of safety assessment to the fore. This is warranted traditionally due to use of current technologies to prepare concentrated extracts, distillates and purified fractions of botanicals for such use. Conventional toxicological evaluation involves high cost, time and scientific challenges to deal with botanicals. Concurrently for a large number of botanicals there exists a documented long history of safe use and efficacy in traditional texts when those botanicals are used as per processes described therein. Recent approaches involving generation of similarity and dissimilarity data of intended botanical in comparison to traditionally processed materials and statistical analysis offer the potential to extrapolate traditionally documented safety data. The presentation will discuss these issues with case studies.

Prof. Amrita Alhuwalia, William Harvey Research Institute, London, UK and Editor-in-Chief, British Journal of Pharmacology

Prof Alhuwalia will speak about what is needed to publish in terms of purified natural products/nutraceuticals, in the BJP. She will focus on experimental design, analysis, minimum requirements for purity, pharmacology of purified substance relative to extract and provide some exemplars of good practice published in the journal.

Prof. Valérie Schini-Kerth, Strasbourg University, France and Chair, IUPHAR Natural Products Section

Prof Schini-Kerth will present the potential vascular protective effect of anthocyanin-rich products including red wine, grape juice and berries, and anthocyanin-rich extracts that preferentially target the endothelium to enhance the formation of nitric oxide (NO), a pivotal vasodilator and inhibitor of pro-atherothrombotic and pro-remodeling responses, and often also endothelium-dependent hyperpolarization (EDH), a potent vasodilator of the coronary circulation and the microcirculation. She will focus on the signal transduction cascade leading to both acute and sustained endothelial NO synthase activation, an optimal condition for vasoprotection, in response to anthocyanin-rich products. A bioguided approach will be presented for the identification of active compounds from a red wine extracts. Moreover, structure-activity studies will be used for the identification of active pharmacophores.

Dr.Denis Barron, Nestle Institute of Health Science, Lausanne, Switzerland

Dr. Denis Barron is the head of Natural Bio actives & Screening Department at Nestle Institute of Health Sciences, Switzerland. His current activities aim at identifying natural food products and extracts that are relevant in the prevention and treatment of metabolic, gastro intestinal diseases. He accomplished developing and expanding collection of samples for biological screening at NIHS. He will present on Natural product collections for screening and current challenges.