

CONFERENCE ON NATURAL PRODUCTS 2014 HELD IN CHICAGO 7TH TO 10TH JULY

A conference entitled “Natural Products: A celebration and a resurrection with Reverse Pharmacology” took place from 07/JUL/14 to 10/JUL/14 at the Hilton Chicago, Indian Lakes Resort, Bloomingdale, Chicago, IL, USA. This 2014 conference was organized by Fusion conferences and chaired by Dr. Mukund Chorghade (THINQ Pharma) and Professor David Kingston (Virginia Tech). About 40 presentations were made by select biomedical scientists coming primarily from academia representing universities, viz. Michigan, California, Oklahoma, North Carolina, British Columbia, Arizona State, Mississippi, Florida Atlantic, University of Kansas, Surrey, Illinois, Indiana University, Hawaii, Wisconsin Madison, Hawaii Pacific, Toledo, University of Strathclyde, Northwestern, Pune. The Harvard Medical School and the California Institute of Technology were also represented. Majority of the participants were from the US and few were from Canada, UK and India. Few select scientists were also from industries delving into natural product chemistry.

Topics such as “Natural products from Microorganisms,” “Natural products as anti-Cancer agents” and “New reactions/methodologies for development of natural products,” “New sources and approaches for natural products” and “Development of new chemical entities (NCE’s) for industries” were extensively covered. Majority of the first 3 days’ presentations were related to natural product resourcing, chemical synthesis, high-throughput screening for biological activity and detailed discussions on chemical structure–activity relationships.

In the concluding symposium, Dr. Ashwinikumar Raut (MRC-KHS) made a lead presentation on “Reverse Pharmacology a Trans-Discipline for Drug Discovery: Novel path for Integrative Ayurveda.” Dr. Raut’s talk of half an hour was a tour de force that focused on “Reverse Pharmacology” and “Integrative Ayurveda,” with “clinical illustrations”; it was very well received. Chemistry and reductionist science-driven drug development

scientists were captivated with holistic science and clinically driven drug development processes elaborated on by Dr. Raut. Additional time was permitted for immediate post-talk questions and answers indicating and sustaining the immense enthusiasm generated for the novel path of Reverse Pharmacology among these drug discovery scientists. Other three presentations in the symposium were made by Dr. David Lee (Harvard School of Medicine) on “Natural product derived from traditional Chinese medicine for cocaine addiction” by Dr. Alexander Statsuk (Northwestern University) on “Pharmacological activators of tumor suppressor PTEN” and by Dr. Rajashree Kashalkar on “Reverse pharmacology: Rejuvenation of traditional medicine.” Many interesting questions were asked related to Ayurveda and traditional Chinese Medicine, particularly in the context of their therapeutics and the commonalities in the half an hour panel discussion that followed all the presentations.

It is abundantly clear that Ayurveda and Reverse Pharmacology are going to be the new paradigms of drug discovery and development. The “old” methods of combinatorial chemistry are at an end; repurposing and repositioning of drugs has limited utility. We would like to target Natural Products and to derive inspiration and intellectual value to discover and develop new chemical entities for a variety of pharmaceutical, agrochemical and cosmochemical applications. The pharmaceutical industry is facing a serious innovation deficit. Critics suggest that “we have become high throughput in technology, yet have remained low throughput in thinking.” Post-marketing failures of blockbuster drugs have become major concerns of industries, leading to a significant shift in favor of single- to multi-targeted drugs and affording greater respect to traditional knowledge. The typical reductionist approach of modern science is being revisited over the background of systems biology and holistic approaches of traditional practices. This environment has led to an opportunity for new thinking to capitalize upon.

Scientifically validated and standardized botanical products can be explored on a fast track basis using innovative approaches such as Reverse Pharmacology, Systems Biology and Information Technology. Many natural product discovery programs use biologically active natural products as an advanced starting point for discovery. These can be considered “pre-validated by nature,” having been optimized for interaction with biological macromolecules through evolutionary selection processes. Embedded in these bioactive natural products

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are a number of diverse, chiral functional groups that are potential sites for protein binding. This diverse source of novel, active agents serve as leads/scaffolds for elaboration into desperately needed efficacious drugs for a multitude of disease indications.

India can be a beacon of hope for a range of therapeutics.

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