**Smart therapeutics in a complex world**

*Every three years, the world’s pharmaceutical scientists gather at the Pharmaceutical Sciences World Congress to discuss cutting-edge scientific developments, and PSWC 2020 in Montreal, Canada, promises to be an exciting and vibrant event, Graeme Smith writes. Young scientists are especially welcome.*

Montreal ranks first in Canada and 10th in North America with regard to research and development in life sciences and health technologies. It has four world-class universities. Up to 45% of head offices of Canadian subsidiaries of major pharmaceutical companies are in Montreal, as well as more than 600 smaller biotechnology companies and contract research organisations. It is, therefore, an ideal city to host the International Pharmaceutical Federation’s triennial Pharmaceutical Sciences World Congress in 2020.

“Smart therapeutics in a complex world” is the congress theme. Denis deBlois, professor of the faculty of pharmacy at the University of Montreal, and congress chairman, says that the term “smart therapeutics” evokes a certain level of intelligence for an agent or of sophistication in the design of a product or process. We live in a time, he says, when drugs are no longer just drugs; they can be genetically engineered cells. “Now let’s think about how best to formulate, manufacture and evaluate these novel therapeutic modalities to make them available more widely, reliably and affordably. This is just one example of how advances in one area create opportunities and challenges across the pharmaceutical sciences.”

Elaborating on the congress theme, he points out: “We live in a complex world, not only because individuals differ in their responses to drugs, sometimes in significant ways, but also because communities around the world differ in their socio-economic conditions, healthcare systems and disease prevalence.” So it seems “one drug for all” will become the exception and newer approaches appropriate to meet the evolving needs of individual patients and communities may become the norm.

**Cutting edge science**

Scientists are invited to come to PSWC, and to explore these issues and other cutting-edge scientific developments with their colleagues from around the world. PSWC is the only global forum where colleagues can compare best practices in pharmaceutical sciences, workforce development and collaborative work, and discuss solutions to global problems.

The congress will provide a comprehensive overview of pharmaceutical developments structured around four tracks: novel concepts, advanced strategies, effective translation and societal impact. Through these four tracks, participants will learn about innovative therapeutic targets, developments needed to meet the requirements of individualised medicine, moving from predictive experimental models to optimised clinical studies, and the contribution of real-world evidence to the evaluation of therapeutics in order to better address individual patient needs.

Professor de Blois comments that the four tracks are transversal because each is relevant in the context of the others. “Information-based technologies may contribute to all stages of drug discovery, development and evaluation. A participant may decide, for example, to examine the issues of global health or workforce development across all four tracks, thus covering pharmaceutical development form target to market under that unifying angle.”

**Variety of topics**

The variety of topics contained in the congress programme means there is something for everyone. Professor deBlois says that congress participants will learn, for example, how AI has the potential to revolutionise pharmaceutical sciences. AI applications are likely to have an impact on target selection, drug discovery, diagnostics, clinical trial design, therapeutic decision-making, pharmacovigilance and pharmacy practice. Already, smart devices equipped with sensors are being used to monitor and communicate information about manufacturing processes and drug effects, and such tracking forms the backbone of the emerging trend of e-health, whose importance is just beginning to be appreciated, says Professor deBlois. “By 2020, it will be high time to reflect on the impact of AI on pharmaceutical sciences, pharmacy practice and health outcomes worldwide,” he says.

Another area for discussion, related to the fourth track on societal impact and real-world evidence, is in the area of drug regulatory review, led by Dr Hervé Le Louet, president of the International Society of Pharmacovigilance. He says that a cognitive leap of faith is that data emanating from various social media platforms and sources are real “real-world” data, and that AI provides the tools for a new era in signal detection and risk management that will result in a reduced delay in regulatory decision-making. So, rethinking of the design of drug utilisation studies is required. He says that 21st century pharmacovigilance is “not merely about uncovering, reporting and addressing adverse events associated with already approved and marketed agents, but also the systematic monitoring of the process of premarket review and post market surveillance, which includes the use of medicines in everyday practice.”

**Young Scientists Conference**

As ever, young pharmaceutical scientists and academics are encouraged to attend PSWC. This year, they are also invited to attend their own Young Scientists Conference, which will also take place in Montreal. Professor deBlois, addressing young scientists directly, says: “This conference, which is organised by young scientists for young scientists, will offer a forum to network and discuss issues important to you, as well as to present your research prior to doing so at PSWC.” The conference will be at the University of Montreal on 22–24 May 2020, immediately before PSWC.

**And finally . . .**

The mission of the International Pharmaceutical Federation is to improve global health by advancing pharmacy science and practice to enable better drug discovery, development access, quality, cost-effectiveness and safety worldwide. Is PSWC an important part of that mission? Professor deBlois is adamant that it is. “PSWC plays an important role in promoting discussions on global issues on best scientific practices, equity and sustainability to best face the unmet medical needs in the world.” So come to PSWC, and play your part, too!