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EDITORIAL

Medicine embraces nano: diagnostics to delivery

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In the 21st century, nanomedicine is one of the fastest growing research areas in medicine and is expected to revolutionize health care by developing innovative diagnostic and therapeutic tools. In this context, an International Conference on Translational Nanomedicine (T-NANO 2014) was jointly organized by the CSIR-National Physical Laboratory, New Delhi, India; Northeastern University, Boston, USA; and the Institute of Life Sciences (ILS), Ahmedabad University, Ahmedabad, India, under the auspices of the IUSSTF-funded Indo-US Joint Centre on Nanomedicine for Head and Neck Cancer, Ahmedabad, from December 15–17, 2014. Center partners included Northeastern University; DFCI, Harvard Medical School, USA; CSIR-National Physical Laboratory; the CSIR-Indian Institute of Toxicology Research, Lucknow, India; the All India Institute of Medical Sciences, New Delhi, India; and the ILS. The central theme of the conference was to discuss the recent developments in nanotherapeutics, theranostics, nanomedicines, regenerative medicine, tissue engineering, diagnostics and imaging, toxicology, models for disease biology, and commercialization of all nanomedicines. The topics covered provided an understanding of how nanomaterials and nanotechnologies have played a pivotal role in advancing our understanding of biomedicine and in generating new tools toward the goal of improving human health.

We sincerely anticipate that this special issue on translational nanomedicine will provide the current state-of-the-art development in many areas of nanomedicine and will prove useful to numerous readers in interdisciplinary research throughout the world.

More than 150 participants from different countries namely the USA, the UK, Germany, Australia, Singapore, and India attended the conference. The response was overwhelming with 36 invited presentations delivered over 7 scientific sessions with 94 poster presentations by master and PhD students as well as young scientists. A panel discussion on the creation of a virtual Global Nanomedicine Academy for teaching and outreach was addressed and appreciated by eminent scientists, experts, and visionaries from India and abroad. Student–scientist interactions addressed numerous queries from young brains on the revolution brewing at the interface of life sciences, engineering, and technology. A panel discussion addressing commercialization of nanopharmaceuticals involving eminent scientists and clinicians from India and abroad representing academia and industry concluded that

- The potential of nanotechnology in increasing the efficacy and delivery of drugs at target sites should be directed more at translation to real commercial products rather than laboratory-based fundamental research.
- More systematic research is required for the safety evaluation of drugs that may not be toxic to cells; however, once coated or encapsulated in nanoparticles may

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exert toxic effects. Further, the environmental safety of nano-based pharmaceuticals and waste from these industries is an area of primary concern.

– A universal regulatory roadmap for nanopharmaceuticals is badly needed for the commercialization of nanomedicine.
– It has been deliberated that the USA and Europe have taken the lead in the financial investment toward national laboratory infrastructure and the uniform characterization of nanomaterials and nanomedicines; a similar modality is required in India.

The Indian Council of Medical Research (ICMR) task-force is formulating a guidance document on nanomedicine, the toxicity of nanopharmaceuticals, and devices, which may require international collaborations to come up with a comprehensive document that would help in the global commercialization of products.

We feel that the knowledge generated through T-NANO could be disseminated widely to the scientific community by publishing this Thematic Series in the *International Journal of Nanomedicine*, entitled Translational Nanomedicine, to provide up-to-date state-of-the-art information on nanomaterials. It was indeed an enriching experience to serve as the guest editors of this Thematic Series, and we are confident that the discussion will continue.

Disclosure

The authors report no conflicts of interest in this work.