

GUEST EDITORIAL

## Emerging Technologies in the Area of Defence Life Sciences

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In the modern era, world has experienced tremendous boost in the field of science and technology, realising its impact on the economic growth and people's standard of living. India has also maintained its pace in the field of science and technology. We are among the world's top 10 nations in the number of scientific publications and patents. The government has made considerable investment and encouraged public-private partnership to achieve self reliance in different sectors such as space, nuclear power, defence, agriculture, and healthcare. Although, India's footprint in the life sciences is relatively small, it has taken giant strides to catch up with the rising economic wave to reckon itself as an international player in the life sciences. It has a strong presence in the field biotechnology, particularly related to agriculture, pharmaceuticals, health care, diagnostics, etc. A testimony to this is the accessibility of cutting edge technologies in the market.

In the Defence sector, Defence Research & Development Organisation (DRDO) under the Ministry of Defence is dedicated towards R&D activities for enhancing self-reliance in various areas of military technology such as aeronautics, armaments, combat vehicles, electronics, instrumentation engineering systems, missiles, materials, naval systems, advanced computing, simulation, and life sciences. With a network of 52 laboratories spread over the cross section of India, DRDO is predominated by the system laboratories. However, the life science cluster of DRDO represented by nine laboratories also boasts of its noteworthy presence among the giants. The life science laboratories of DRDO are committed to R&D activities to ascertain that the soldiers behind the weapons are in top form of physical and mental fitness, and their psychological, medical and nutritional needs are adequately addressed. The soldier also needs to be protected

from environmental stress. The critical S&T endeavours to address these challenges include bio-science, bio-technology, bio-engineering, weather and environmental studies, ecology, bio-safety, psychology, pharmacology and toxicology, nuclear, biological and chemical (NBC) warfare, food technology, medical sciences, high altitude research etc. Development of state-of-the-art NBC defence technologies and bio-digester technology for human waste disposal are some of the major life science research achievements of DRDO.

Keeping in mind the growing research in the area of life sciences, a new publication 'Defence Life Science Journal' (DLSJ) has been started as an initiative of DESIDOC with life science cluster labs of DRDO to bring forward the latest research being done in this area. This is the second issue of this journal, which covers several aspects of life science research relevant for defence. The issue covers articles on synthesis and toxicity studies of oximes, kinetic studies on removal of sulphur mustard, test procedure for pressure swing adsorption, review articles on futuristic emerging technologies in potable water, air filtration systems for NBC collective protection, and biopesticides. Moreover, there are two articles on *Aedes aegypti*, the transmission vector for dengue and chikungunya viruses

It is an honour for me to serve as the Guest Editor of this Special Issue. I sincerely acknowledge all the authors for their outstanding and overwhelming contributions. I am grateful the Editor-in-Chief, the Editorial Board, and the staff of the DLSJ for their support in realising the special issue. Lastly, I entreat all our valuable readers to submit their valuable work for publication in DLSJ so that the journal could serve as the face of DRDO and bring your outstanding work with pride to a limelight.

**Dr Ajay Kumar Goel** received his PhD (Microbiology) from CCS Haryana Agricultural University, Hisar, in 1999. Currently working as a Scientist 'F' at Division of Biotechnology, Defence Research and Development Establishment, Gwalior. He has more than 80 research papers, 4 patents, radio talks, and several overseas presentations to his credit. His current interests include : Development of detection and protection systems for potential biothreat agents.