



Role of Picotechnology and Nanotechnology for Personalized Medicine and Healthcare.

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Abstract:

The aim is to use Nanotechnology and nanomaterials/ biomaterials for development of non invasive diagnostics and for therapeutic applications. Several rare earth based functionalized nanomaterials were developed for targeted drug delivery and contrast agents for magnetic resonance imaging for the diagnosis of early stage cancer in mice models. The study was extended to evaluating their compatibility, stabilization in blood after injection, pharmacological studies to understand the clearance and shelf life in the body. The other part of the work focuses on fabrication of nanomaterials based membranes for device applications, for example fabrication of nanomaterial composites for removal of uremic toxins from dialysates to make dialysis faster and the fluid reusable. This is going to be a boon for people suffering from chronic kidney diseases and people with diabetes which ultimately lead to kidney failure. Besides, the imbalance in gut microbiota (dysbiosis) develops a highly permeable intercellular epithelial junctions leading to translocation of harmful microbes and toxins into the blood. We are attempting to balance the gut microbiota by a series of our products instilled with probiotics. If required we can perform the shotgun sequencing studies to understand the diversity of the microbes in the gut responsible for the diseased condition. Patients respond differently to different drugs. No patients have the same response to a particular drug molecule. It is therefore very challenging to determine which drug or combination of drugs should be given to a particular

Biography:

Dr Ranu Dutta is a Nanomaterial and Biomedical scientist from the University of Allahabad. She has served the University of Allahabad as a scientist since 2007 after her masters in Biotechnology. She was the recipient



of the Young Scientist award by the Dept of Science and Technology, Govt of India in the year 2012 for her contributions in the field of life sciences. She is a Professor at D Y Patil International University, Pune and is also managing her startup Nanoera Medicare Pvt. Ltd. She is the scientific advisor of several startups and companies making healthcare products. She is a visionary scientist and an independent researcher with an original way of thinking. Her areas of interest include Nanobiomaterials, Precision medicine and personalized healthcare, Integrative Medicine, Magnetic Resonance Imaging, targeted drug delivery etc.

Doctor of regenerative medicine, WAMS certified

Publication of speakers:

1. Gadolinium metallo nanocongregates as potential magnetosensors for detecting early stage cancers
2. Design of different sized polyethylene glycol nanovectors to overcome the barriers in cancer drug delivery
3. Biogenic Gadolinium based nanoparticles and their luminescence studies
4. Curcumin conjugated Gd₂S₃ nanoparticles for Biomedical Imaging
5. Combining the existing modalities for future Therapeutics: Nanotechnology in Medicine

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