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Personalized nanomedicine takes aim at cancer treatment

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Abstract

Each year, nearly 1.4 million Americans are diagnosed with cancer, another 600,000 die from it. The medicines used as treatments have clear limitations. Chemotherapy, radiation, and surgery-all big three treatments–all wreak havoc on healthy cells and tissues as well as cancerous ones. If there is a case to be made for personalized medicine, “cancer is it”. Current literature strongly supports the need for a great scientific effort to be made in this field.

Notably, the lack of identified molecular biomarkers that fully explain the heritability of complex traits, and the inability to pinpoint causative genetic effects in some complex tumors, making it a very difficult for target recognition and treatment. However, for developing safe and effective medicines to cancer that raised hopes, nanomedicine “is not just one more tool, it is an entire field benefiting from the use of the modern cutting edge molecular tools. Remarkably, they are enabling academic researchers and oncologists to combine all advances, creating nanosized particles that contain drugs targeting specific cell surface receptors and other potent molecules designed to kill cancerous cells. Targeting the most appropriate patients might be a way of using newer medicines in the most effective manner essentially devoid of side effects.

Scientific advances in the use of genetic information to estimate disease risk, assess prognosis, and manage patient care. By rigorous target validation, identifying risk factors, prognostic factors, and predictive factors, hope is that interventions can be tailored to maximize patient benefit and minimize toxicity, the primary goal of personalized nanomedicine. But, many outstanding questions remain.

Biography

I am working as a professor, in the Avalon University School of Medicine, Willemstad, Curacao. In 2005, I completed my PhD from the prestigious Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, India. After one year as a paid lecturer (Jaypee University of Information Technology, India), I obtained a post doctoral position in the Mayo Clinic, Rochester MN, USA. In 2008, I was an invited speaker in Experimental Biology San Diego, California. After two years in Mayo Clinic, I had another opportunity to work as a scientist in the Faculte of De Médécine, World Health Organization (WHO) collaborative center, CNRS, Marseille, France for two years. I have an experience of more than 12 years of research and teaching from various medical institutions of world repute.

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