Researcher Profile

UHN Microarray Centre

Dr. Warren Chan

Nanoscience and biomedical engineering

At the Integrated Nanotechnology & Biomedical Sciences Laboratory (INBS) at the University of Toronto, Dr. Chan and his team (1) use nano- and microtechnology to study the genomic and proteomic changes associated with cancerous and virally-infected cells, (2) investigates nanoparticles interactions with biological systems to gain greater insight to the issue of nanotoxicity and to design nanoparticles for biomedical application, (3) and design quantum-barcode systems for high throughput multiplex detection of infectious disease markers.

Dr. Chan and his team have contributed to the advancement of nanotechnology-based drug delivery systems and cancer therapeutics. Unlike conventional drug therapies, in which the drugs are non-specifically distributed and quickly metabolized, nanotechnology enables drugs to be delivered specifically to the target cells and released intracellularly. Dr. Chan's group has also used UHNMAC Human cDNA microarrays to monitor the gene expression of cells following the uptake of gold nanorods. This study found that very few genes showed differential expression and concluded that gold nanorods could be used for therapeutic applications, such as thermal cancer therapy, due to their tunable cell uptake and low toxicity.

Dr. Chan and his colleagues have combined nano- and microtechnologies (quantum dots and microfluidics) to create a diagnostic system capable of multiplexed, high-throughput analysis of infectious agents in human serum samples. They have also published other studies involving quantum dots for the labelling of subcellular structures, quantification of protein expression, and surface marker labelling

Dr. Warren C. W. Chan is a Biomedical Engineer and Professor in the Faculty of Applied Science and Engineering, Institute of Biomaterials and Biomedical Engineering, at the University of Toronto. He also holds a Canada Research Chair in Bionanotechnology.

UHN Microarray Centre offers a variety of microarray products and genomics services. The centre also offers bioinformatics services, from experimental design to downstream data analysis and mining, enabling researchers to maximise the success of their genomics projects.