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Nanomedicine and genomics: Two theranostic strategies toward green and advanced personalized medicine

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Abstract

Nanomaterials (e.g. nanoparticles), nanoscale biodevices (e.g. biosensors, arrays) and genomic platforms along human sequencing projects (e.g. GWAS) are revolutionizing medicine. The recent advancements of the nanobiotechnology and genomics are quite promising. They can be combined or not, but both are contributing to prevention, diagnosis, prognosis and therapy of patients in a faster, personalized and hopefully in a safer and cost-effective manner.

Since the past decade, tremendous advancement has been made toward developing nanoscale biosensors (e.g. graphene-based), drug and nutraceutical delivery nanosystems (e.g. fluorinated nanoparticles) which are valuable for diagnosis and/or therapy (i.e. nanotheranostics). Biocompatible and biodegradable nanocarriers are usually of 1-100 nm in size, loaded with a substance are intended to improve the diagnosis (e.g. nano-imaging) and/or the therapeutic index (e.g. bioavailability, stability). Also, several methods of nanoencapsulation (e.g. nanoprecipitation) and nanodevices (e.g. biosensors) have been employed for drug delivery, targeting and/or imaging, tissue engineering and regenerative medicine.

Besides, the current revolution in genomics (i.e. the science of monitoring genes, epigenes, and gene products using high throughput approaches) allows the determination of our entire DNA sequence (e.g. by NGS, arrays) but also understand how our specific genome sequence can inform our health (e.g. signaling pathways, mutations, polymorphisms). Such sequence and molecular omics profiling (e.g. proteomics, glucomics, lipidomics) is expected to be powerful in preventing, detecting, understanding, and treating complex diseases such as cancer and inherited diseases that are otherwise difficult to diagnose.

My keynote speech will be all about facts and artifacts, ties and lies, trends and prospects, hopes and insights for the Environment and Humanity!

Biography

Dr. Farid Menaa has completed his Ph.D in radiation oncology and gerontology from the French Atomic Energy Authority (CEA- 2003) and University of Paris (Jussieu-Sorbonne). Thereafter, he completed three international post-doctoral terms in medicine, genomics, sciences and technology. Among other professional activities, he is currently the R&D executive director of Fluorotronics Inc., a chemical and nanotechnology company. He has published many papers in reputed journals and serving as an editorial board member of prestigious scientific journals. His main current focuses are related to preventive, personalized, translational, integrative and regenerative medicine, in order to prevent and implement early diagnosis and efficient therapy.

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