ASK THE EXPERTS

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Q: What is the potential of using nanobiotechnology and what are its fields of application?

A: Nanobiotechnology is a very broad field of knowledge. It's mainly based on the convergence of dimensions between nanotechnology-based materials or devices and basic components of biology such as biomolecules or cells. The main applications of nanobiotechnology are in the fields of healthcare, cosmetics, food and veterinary products.

Q: How does nanobiotechnology impact specifically on medicine as a field?

A: In recent years, the interest in basic knowledge on cell-substrate interaction has grown increasingly, as it has now been recognized to play a key role in the differences observed in cell behaviour when comparing in-vitro and in-vivo culturing. This represents a crucial factor in the fields of tissue engineering, drug development and regenerative medicine. Cells in their natural environment are surrounded by nanostructures when contacting with each other (membrane have nano-size features) or with the extra-cellular matrix. The knowledge of these interactions is the basis for developing new and more suitable scaffolds for implants applied to tissue engineering. Moreover, in combination with the capabilities of stem cells we are at the beginning of a new era of clinical therapies based on regenerative medicine.

Q: How can nanotechnological devices contribute to living a longer and healthier life?

A: New diagnostics based on nanotechnology could offer an earlier and more personalised risk assessment before symptoms show up. It's clear that the main advantage of nanomedicine on quality of life and healthcare budgets is earlier detection of a disease, leading to less severe and costly therapeutic demands, and an improved clinical result. Nanobiotecnology devices and procedures will provide crucial input for clinical decision taking and therapy planning by new in vitro and in vivo test and diagnosis lab-on-chip or imaging systems. Finally, nanotechnology can also improve therapeutic systems by means of the development of targeted delivered drugs.

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