IS THE FUTURE INTEGRATION OF NANOTECHNOLOGY INTO OSTEOPATHIC MEDICINE PLAUSIBLE?
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TOPIC

Research Topic: I want to explore the possible integration of nanotechnology into the medical aspect of science and its possible future in treatment of disease.

Research Question: How can we involve nanotechnology successfully in different medical processes to avoid surgery?

LITERATURE REVIEW

Nanotechnology has been around in the scientific community for years now, but its potential as a functional tool has not been fully realized. Nanotechnology is currently used primarily in the fields of engineering and in commercial industries. No one has yet fully integrated this technology with biological systems and processes. The ability to systematically modify the properties of nanostructures by controlling their structure and their surface properties at a Nano-scale level makes them extremely attractive candidates for use in biological contexts, from fundamental scientific studies to commercially viable technologies (Halas). There are infinite possibilities of integration of nanotechnology into medicine.

Although nanotechnology is not a new concept, there has not been enough study into its almost infinite possibilities. Nanotechnology is the ability to work at the atomic, molecular, and super-molecular level in order to understand, create, and use material structures, devices and systems with fundamentally new properties and functions resulting from their small structure (Bennett). Nanotechnology offers new solutions for the transformation of bio-systems and provides a broad technological platform for applications in several areas of medicine (Roco). Robotic systems have been created at the sub-molecular level and have already been directly involved in several military and industrial processes. Areas of integration that could benefit from this technology are biology, chemistry, biotechnology, medicine, and healthcare.

Applications of nanotechnology for the treatment, diagnosis, and control of biological systems has recently been referred to as Nano-medicine. Using nanotechnology to develop surgical equipment can render surgical procedures much less invasive (Shetty). Several medical operations today have been thought of as invasive and unethical. The integration of nanotechnology into medicine could once and for all lead to a complete and closed operation, and eliminate the need of open-heart surgery. Nanotechnology could be maneuvered, and programmed to unplug arteries, fix abrasions, and remove invasive bacteria or viruses (Fisher). Promises of nanotechnology in future applications could not only touch, but also improve so many if not all areas of our lives. I will be looking at the conceptual and analytical aspects of the integration of nanotechnology into osteopathic medicine and its benefits.

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METHODOLOGY

Throughout the next few years, in preparation for my thesis, I will be performing the following tasks to help me to better understand these processes and what steps have to be taken to lead to a successful integration:

1. I will be researching past methods of nano-technological integration into different aspects of engineering, industrial processes, manufacturing, and, of course, medicine.
2. I will be finding where the experiments went wrong, why they went wrong, what programming goes into the units, and what possible improvements can be made to lead to a successful fusion.
3. I will discuss the current dimensions, structure, function, and operations of different nanobots being used today.
4. I will also look at the experiments already conducted and see exactly what they used, what they used them for, and how the operation and function could be improved.
5. And finally, once everything is prepared, I will do my experimentation on adult pigs, since they have a circulatory system that is most similar to that of humans.

REFERENCES

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5. Shetty, Rahul C. Ph.D. “Benefits of Nanotechnology in Cardiovascular Surgery- Review of Potential Applications”. Department of Cardiovascular Surgery at Quebec Heart Institute, University of Laval Hospital, Canada. 2006