IENN Institute Brings Unexpected Embryonic Opportunities Through the Dissemination of its Researches

Through nanotopography the human body is getting closer to machines with biohacking actions

MELBOURNE, AUSTRALIA, July 24, 2018 /EINPresswire.com/ -- Using Nanotechnology for Mapping and Cataloguing with I.D. number the Human Tissues Parts as in the engineering machines. A study that uses nanotopography to approximate biology with mechanical engineering by the topographic, microfluidic and nervous mapping of human tissues at the nanotechnological level, the bottom-up from top-down, by slicing and characterization of biological tissues.

How can a beanstalk tell us so much about human tissue engineering? It was for this question that the research began, taking an alternative way beyond DNA sequences for understand the tissues, and to verify this, an independent researcher Edilson Gomes de Lima has published a preliminary study. When studying the dedifferentiation in plants, totipotency, protoplasts, meristematic tissues targeting a future investigation with the iPSCs, but beginning with the pluripotent vegetable cells was decided to slice a beanstalk completely from its roots the leaves, using a tissue-slicer, soon after photocopying the cut parts to digitally reassemble and mapping the internal microfluidics as a template to be applied on the artificial tissues.

The study, named "Biomimetic and Functioning Artificial Tissues - Mastering Irrigation, Nourishment, Microfluidics and Nerve Networks to Keep the Cells Alive," exposes research on nutrients, oxygen and other life support needed to keep alive specialized cells that make up the artificial tissues and organs.

This research aims at a future collaborative work focused on the nourishment of cells in artificial tissues, in the long work for mapping the tissues and standardizing the parts, besides identifying with code the items of the tissues and processes, for each circulatory and nervous system. The study also shows the potential that new sciences and technologies confer on the feasibility of new studies towards artificial life, which is related to the greater precision in the understanding of the whole at the nanotopographic level including processes of the biological tissues. Among the subjects and future perspectives to this research includes:

• Cataloguing vessels, microfluidic parts and minimal process data to keep alive cells in tissues.
• Mapping and code each circulation microchannel with an I.D. number linked to a datasheet.
• Generating accurate data and information to feed new human artificial tissue production machines.
• Create catalogued information on biological spare-parts with datasheets for specification and characterization
• The traditional complex machines engineering and integrated circuit architecture techniques for microfluidic networks in human tissues

The future intention is to mapping the entire microfluidic and bioelectrical flora on human tissues and add an I.D. number to each irrigation circuit for creating spare-parts, similar to engineering made in integrated circuit architecture or in mechanics. Each circulation line flow or communication identified and calling its datasheet with all descriptive, technical specification

and characterization for mapping the cell structures and matrix around in the artificial tissues, their connections, works and process that they do to stay alive. All for a better understanding of the connections, receptors, terminations, nutrition, communication and fluids transport on a detailed nanotopography.

The nanotechnology and the techniques used in traditional engineering for mapping the components of the human body and documents the parts with an I.D. number to call a datasheet presents a huge potential for bringing together and presents understanding from several specialties into one single descriptive biologic manual. A technique similar to that performed in mechanical engineering used in aircraft, helicopter, vehicle and complex machinery industries to have a general record, control and knowledge of all the parts that make up the whole.

The major difficulty is not in the generation of new tissues, with techniques e.g. using iPSCs induced pluripotent stem cells, but in the organization and tissues functionalization. When repairing two living cells on a tissue, the problem is to reconnect them, in a perfect regeneration, keeping the network of nutrition, electrical and structural communication intact, as well as making these connections recognized by the body.

However, nanotopography and engineering techniques alone may not be enough, for a complete new tissue mapping technology, because of the complexity involved. The difference that surrounds nanotechnology and bioscience is defined not only by measures, but also by effects, events, methods and dynamics processes.

The nanotechnology works in the range on size from 1-100 nm, biology and general biosciences go much further than dimensional, ranges around μm, nm, fragments of particles around angstroms and mols. Some biomolecules range around 2-16nm, human cells around 25-100μm, in addition to measurements of some viruses near 150nm. The human body parts are very varied. In fact, the discussion revolves around a new human anthropometry, this new anthropometry of the biological tissues components that don't have a pattern yet, for an expected future manufacture of the biological parts. In this new biological anthropometry involving micro / nanoparticles, each necessary component must be considered.

As presented in the recently published study entitled "Biomimetic and Functioning Artificial Tissues - Mastering Irrigation, Nourishment, Microfluidics and Nerve Networks to Keep the Cells Alive", in the HRPUB Journal Bioengineering and Bioscience. The study is a suggestion for possible future perspectives with a precise code for the identification of the biological circuits on all fluid circulation and nutrition channels, more precise studies and even standardizations will be viable. With these studies the viability of artificial organs will become increasingly accurate, and even new organ formats can become common, as already done in replacement parts of machines. As well as the identification of damaged tissues that require regeneration with an I.D. number for better understanding on each termination, so, this preliminary study attempts to brings more technique as engineering standardization for this new so small anthropometric science. Also as an alternative way for new studies on cyborgs, artificial life and improve devices as soft lab-on-chips with heavy use of the surface area on its network of microchannels at nanoscopic level.

IENN
Engineer
0449602567
email us here

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