Tissue Engineering

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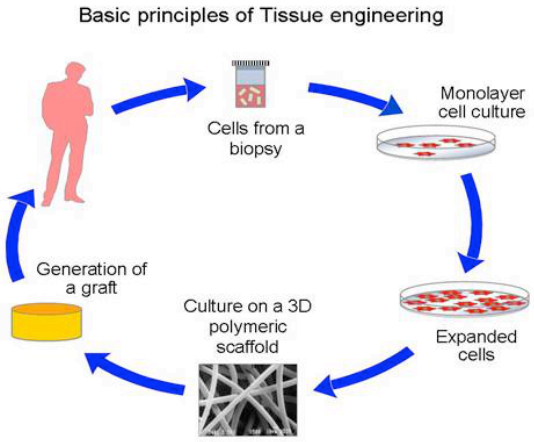
Every day Human technology is growing and advancing. Over 300 years ago and English Scientist named Robert Hooke discovered the cell when looking under a microscope at a cork slice. Ever since the Humans wanted to learn more about what cells are and what we can due to manipulate them. Ideas kept growing and expanding as more great minds began to look deeper into cell research. Then in 1998, the development scaffolds created the possibility of today's tissue engineering. Tissue engineering is basically "understanding the principles of tissue growth, and applying this to produce functional replacement tissue for clinical use".

The method behind tissue regeneration starts with the collection of cells. Based on the patients needs the cells are usually taken from a healthier part of the body. Fox example if a burn victim were to have tissue reconstruction they would take healthy skin cells from another part of their body an implanted into the damaged areas. Then the cells are implanted into artificial structures called scaffolds which are capable of supporting the growth of cells in a three dimensional space. Scaffolds are the key to the whole process of tissue engineering. There are four main keys that scaffolds could do to supply cell regrow in an artificial environment. First they allow the cell attachment and migration. Also, scaffolds deliver and retain cells. Another thing is they enable diffusion of vital cell nutrients and expressed products. Finally they could exert certain mechanical and biological influences to modify the behavior of the cell phase. Bioreactors are the next step in this process. The role that these reactors play is to replicate the physiological environment that cells live within the human body in order to promote cell and tissue regrowth. Once the cells are fully-grown, the scaffold has to be compatible with the human body therefore it must be made with biodegradable substances. Common materials that could be use are PLA (polylactic acid), PGA (polyglycolic acid), and PCL (polycaprolactone). These polyesters degrade in the human body to form lactic acids. There are many different ways to introduce the tissue engineering scaffolds to the human body. Some of methods that they use are Gas Foaming, Electrospinning, and thermally Induced Phase Separation.



Overall tissue engineering has many applications that have a great impact on medical care. Instead of spending on costly treatment for medical issues like kidney failure, tissue engineering offers the possibility of regrowth of new healthy organs, which in the long run is much more cost efficient. As our knowledge of the human body continues to grow every day, future possibility of tissue engineering could be limitless.

Work Cited

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