Printing Human Organs Using Biotechnology

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3D bio-printing is a relatively new development in the medical field. It is defined as the process of creating and generating functional human organs using 3D printers. It is possible to develop organs to replace dysfunctional and damaged ones using this advanced technology.

Problem

• Suitable donated organs are not easily acquired. Figure 1 shows statistics.

- Possibility of shorter longevity of donated organs.
- Extremely high costs due to procurement and suppressants.

Solution

3D Bio-Printing Technology

- On demand availability (Organ Library).
- High dimensional accuracy of printed organs.
- Rare rejections from the patients’ body.
- Longer life span of newly printed organs.

Benefits

• Extremely complex organs, such as the brain, are preliminary at this stage.
• The current printing process takes an average of 1 week to complete.
• Ideal and optimal conditions are required for development. Not possible without controlled environments.

Limitations

• Possibility of shorter longevity of donated organs.
• Extremely high costs due to procurement and suppressants.

Conclusion

Bio-printing technology offers wide ranges of possibilities to enhance human healthcare. Yet, future improvements in this technology should provide rapid organ development and more reliable processes that contribute to various medical applications. Figures 4 and 5 below, show development of actual 3D printed organs. This technology will enable us to further discover how organ anatomy affects body performance and will also allow for organ fabrication with advanced tissue engineering. Full availability is expected in year 2020.

References