

Printing skin

The art of printing has come a long way since Johann Gutenberg invented the first movable type printing press. These days, printing processes have evolved to include screen-printing, flash printing, and laser printing. Paper has long since ceased to be the only printable material available. Printing can now be done on t-shirts, glass, buttons, computer mouse mats, mugs and key rings. And now scientists have come up with an innovative way to print skin.

Printing skin, as opposed to printing on skin, is achieved with the use of inkjet printers that are around ten years old. Instead of ink, they are adapted to shoot out proteins onto a specialised gel in place of paper. In this way, sheets of human skin as well as other types of tissue are created, to be used in skin grafts and hopefully one day replace organs.

The process is the brainchild of Thomas Boland, an assistant bioengineering professor at Clemens University, who is very optimistic about skin printing's success and development. He believes that the technology will be available in only a few years time.

Methods for growing skin from healthy cells are already in use in many hospitals. This process is limited, however, as the skin can't be manufactured to a depth essential for networks of blood vessels and pores. Inkjet printers are ideal for the creation of solid layer structures, as they can make several passes over the special gel and so generate skin structures of several layers. Older printers are used because the holes in their spray nozzles are larger than the ones in modern printers. Narrow holes could potentially damage the fragile skin cells.

Printed skin is of a higher quality than traditionally grown skin, as it's more flexible and remains so after time. There is also a much smaller chance of printed skin being rejected by patients' bodies. This makes it a safer process and more cost-effective than traditional skin grafts in the long run.

The potential of this method is enormous as it could conceivably be used for the creation of much bigger and thicker organs. This function would be invaluable for those people needing organ transplants, as it would dramatically reduce the waiting period and ease the demand for organ donors.

Patience is needed in the meantime, however, as the technology is still about ten years away from human trials. The wait for printed organs is even longer because scientists require specialised cells and optimal growing conditions for the survival of denser structures. To date, no experiments have been conducted on cultivating other cells. Creating viable printed skin is the primary focus of the research. So it will be sometime before we have the convenience of organs grown while we wait.

Recommended sites:

<http://www.pcworld.com/article/id,118815-page,1/article.html>

<http://itotd.com/articles/430/printing-skin-tissue/>

About the Author

Sandra wrote this article for the online marketers Circle Leaflet Printing [colour brochure printing](#) one of the leading printing companies in the UK

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