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Scottish develop pioneering 3D bioprinting

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Singapore: A team of researchers from Scotland's Heriot-Watt University have developed a 3D printer that can print human embryonic stem cells, using which three dimensional human organs can be produced, thus ensuring reliable and animal-free drug testing. The technology will also enable the provision of organs for transplant-on-demand without the need for donation.

The research, which has been published in the journal Biofabrication, has been hailed as the greatest breakthrough in 3D bioprinting yet achieved. The researchers have shown that their 'valve-based' 3D printer is capable of printing human embryonic stem cells (hESCs).

Team member Dr Will Wenmiao Shu predicted that, "Human organs can be cloned without the problems of immune suppression and potential organ rejection. In the foreseeable future, a small amount of human cells required for biopsy will be 3D-printed."

Dr Shu added that, "This method is gentle enough to maintain high stem cell viability and, most importantly, 99 percent of the printed hESCs maintained their pluripotency, whcih is the ability to differentiate into any other cell type."