

‘Bioprinting’ body parts could become a reality—if we clear some hurdles

Printed replacement human body parts might seem like science fiction, but this technology is rapidly becoming a reality with the potential to greatly contribute to regenerative medicine. Before any real applications, “bioprinting” still faces many technical challenges. Processing the bio-ink and making it stick to itself and hold the desired printed gel structure have been proving particularly difficult especially in inkjet printing. Few methods currently exist for gluing bio-ink droplets together and these do not work for every kind of cell, motivating new alternative approaches.

Building on their previous work, researchers at Osaka University have now refined an enzyme-driven approach to sticking biological ink droplets together, enabling complex biological structures to be printed.

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Currently, sodium alginate is the main gelling agent used for inkjet bioprinting, but has some compatibility problems with certain cell types. The researchers’ new approach is based on hydrogelation mediated by an enzyme, horseradish peroxidase, which can create cross-links between phenyl groups of an added polymer in the presence of the oxidant hydrogen peroxide.

Although hydrogen peroxide itself can also damage cells, the researchers carefully tuned the delivery of cells and hydrogen peroxide in separate droplets to limit their contact and keep the cells alive. More than 90% of the cells were viable in biological test gels prepared in this way.

[Editor’s note: Read the [full study](#) (behind paywall)]

Read full, original post: [Growing organs a few ink drops at a time](#)