

3D printer fashions functional human muscle, cartilage, and bone

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A team of biomedical researchers at Wake Forest Institute for Regenerative Medicine has just completed an invention 10 years in the making. It's a 3D printer that can craft relatively simple tissues like cartilage into large complex shapes—like an infant's ear. Using cartridges that are brimming with biodegradable plastic and human cells bound up in gel, this new kind of 3D printer builds complex chunks of growing muscle, cartilage, and even bone. When implanted into animals, these simple fabricated tissues survive and thrive indefinitely.

The scientists led by Anthony Atala surmounted two particularly thorny challenges that have long impeded the futuristic goal of printing living human tissues. First, their new device manufactures large, stable chunks of printed tissue that don't fall apart. Second, it keeps those large structures alive and growing. The new 3D printer is unveiled and outlined [in the journal *Nature Biotechnology*](#).

"This is the first [bioprinter] that can print tissue at the large scales relevant for human implantation," Atala says. "Basically, once we've printed a structure, we can keep it alive for several weeks before we implant it. Now the next step is to test these [printed tissues] for safety so we can implant them in the future in patients."

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