

## Smile! Scientists have developed 3D-printed teeth that kill bacteria on contact

By [Drew Prindle](#) — October 19, 2015



There are dozens of startups out there looking to [rethink](#) the way we brush our teeth, but what if we never had to brush our teeth in the first place? It sounds crazy, but if researchers from the University of Groningen in the Netherlands have their way, you

might never have to fiddle with toothpaste and mouthwash in the future. Rather than trying to clean your teeth retroactively, the researchers have developed a set of artificial teeth that repel microbes on the molecular level, so plaque and tartar can never accumulate on them in the first place.

To make this possible, the teeth are 3D printed with a special antimicrobial plastic developed specifically for use inside the human body. The plastic, which is extremely hard and durable, is impregnated with antimicrobial quaternary ammonium salts. These salts are positively charged, and will therefore disrupt the negatively charged cell membranes of any bacteria they come into contact with — effectively causing them to rupture and die. “The material can kill bacteria on contact, but on the other hand it’s not harmful to human cells,” Andreas Hermann, lead researcher, told [NewScientist](#).

During preliminary tests of the material, Hermann and his colleagues found that their salt-imbued polymer material killed over 99 percent of the microorganism *Streptococcus mutans* — the little bacterium that’s largely responsible for tooth decay. That’s even better than toothpaste and mouthwash.

Don’t set up a dentist appointment and start knocking out your molars just yet, though. While these results are certainly promising, the technology still isn’t quite ready for primetime. Additional tests must be conducted to determine if these 3D-printed salt teeth can retain their properties after being subjected to the daily punishments that normal teeth endure. Right now researchers don’t know how the material holds up under prolonged exposure to saliva, acidic foods and liquids, or even toothpaste.

“For clinical use we need to extend this, and investigate the compatibility with toothpaste,” Hermann said in an [interview](#). He and his team also need to figure out if their polymer is strong enough to withstand chewing, but Hermann concluded that he doesn’t think the overall process will take very long. “It’s a medical product with a foreseeable application in the near future — much less time than developing a new drug.”

<http://www.digitaltrends.com/cool-tech/3d-printed-antimicrobial-tooth-prevents-plaque/>



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