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Osaka Startup Making People With Dental Problems Smile

Teeth regeneration drug could be expected by 2030

By Oliver Arlow

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A pharmaceutical startup based in Osaka is scheduled to commence clinical trials in the coming months on a new drug designed to stimulate the growth of new teeth in humans.

Toregem Biopharma Co, which is funded by Kyoto University, was founded in May 2020 and has already successfully grown new teeth in mice, ferrets and dogs. If the trials on humans go smoothly and, for the first time in the world, a complete tooth develops, then the company anticipates being able to release the new drug by around 2030.



Kiso pictured with her Toregem Biopharma co-founders Katsu Takahashi and Muneo Takatani. Image credit: toregem.co.jp

Company President Honoka Kiso said she was motivated to focus on this area of medicine after losing two teeth to a mandibular bone disease while she was still a high school student. She was later given an implant to replace the lost teeth, she said in an introduction to the company on its website, but wanted to find a way to regenerate lost teeth.

The drug will also help people with congenital edentulism, a condition that means people are born without the ability to grow teeth. One of the primary causes of the complaint is a molecule – known as USAG-I – that inhibits the functions of proteins critical to the formation of bones.

The Toregem Biopharma drug is designed to inhibit the functions of the molecule and promote the growth of new teeth from “buds” or “tooth embryos.”

Helping patients to grow their own teeth will be a significant improvement on present treatments, the company said, which are limited to dentures or implants. For children with congenital edentulism, new sets of dentures must be made as the child grows and the shape of the jaw bone changes.

In addition, the treatment is complex and specialized, meaning that there are only a handful of doctors who can perform the procedures in Japan.

If the clinical trials in human subjects are a success, Kiso believes that people will no longer fear losing a tooth

because there is a way to regenerate a replacement. She said she has seen people undergoing regular treatments and surgeries as they try to keep a damaged or decaying tooth, even if there is little chance of success. If they know that it is possible to regrow a lost tooth, they do not need to go to extremes to protect diseased teeth, she said.

“We hope to realize a world where people can chew with their own teeth for a long time, even as they grow old,” she said in an interview published on the website of Kyoto University Innovation Capital.



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