Regrowing a tooth might be a concept years away from realization, but scientists in the US and Asia have reported the discovery of a new source of cells that could help to stimulate the renewal of dental cells in humans in the future: alligators.

Similar to most mammals, these cold-blooded animals have the ability to replace lost teeth by simply regrowing new ones. What made them particularly interesting for the researchers was the fact that unlike sharks, whose regenerating teeth are just an extension of their skin, the structure of an alligator’s dentition is very similar to humans’ dentition, with teeth implanted in the sockets of the jawbone.

Both humans and alligators also possess a band of epithelial tissue, which, after having investigated it using microscopy imaging techniques, the researchers believe to contain cells that trigger the permanent replacement of teeth in the animals.

While alligators can replace their teeth throughout their lives through this dental lamina, tooth development in humans usually stops with the adult teeth, except for the condition of hyperdontia or supernumerary teeth, which has been related to congenital disorders, among other causes. The research team, which consisted of researchers and clinicians from the Keck School of Medicine of the University of Southern California (USC) and other institutes in the US, Taiwan and China, is now planning to isolate those cells and investigate their potential for use in regenerative medicine. They aim to gather more information about the molecular networks that are behind the renewal process.

“Ultimately, we want to identify stem cells that can be used as a resource to stimulate tooth renewal in adult humans who have lost teeth. But, to do that, we must first understand how they are renewed in other animals,” said Cheng-Ming Choung, head author and USC pathology professor.

Alligators are estimated to be able to replace their teeth up to 50 times during their lifetime. Although specimens of 100 years and older have been reported by zoologists, the reptile lives an average of between 40 and 50 years. The species, whose origins can be traced back to over 65 million years ago, inhabits only parts of China and the US.

Prior research in tooth regeneration has focused on using or reprogramming nondental cells, as stem cells derived from human dental tissue have not proven to be a substantial source for tooth bioengineering yet. In recent experiments, however, scientists from the Dental Institute at King’s College London reported the successful combination of isolated adult human gingival tissue from dental patients with tooth-forming cells from mice.

Researchers investigate regenerative potential of alligator teeth

![Photo of alligator](image1.jpg)

This Chinese alligator can renew its 80 teeth up to 50 times during its lifetime.

Beauty says it all...

![Before and After photos of teeth](image2.jpg)

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