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In lab dish, scientists make tear and saliva glands

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Researchers have created saliva glands and tear glands using stem cells from mice

Researchers said on Tuesday they had created saliva glands and tear glands using stem cells from mice, marking a further advance in the quest to grow replacement bio-engineered organs.

The work shows potential for treatments for malfunctioning glands that cause "dry eye" or "dry mouth" syndromes, which affect tens of millions

of people around the world, they said.

A team led by Takashi Tsuji of the Tokyo University of Science grew the glands in the lab dish from precursor cells, and transplanted the primitive organs into mice.

Both transplanted glands knitted well with the adjacent tissue, connecting up to ducts and nerve fibres, they reported.

The lacrimal glands, or tear glands, produced teardrops and the saliva gland responded normally to stimulus from food and protected the mouse against oral infection.

The glands worked over the long term, which in mice is the 18th-month mark, the researchers add.

Failure to lubricate the eyelid, a condition called corneal xerosis, can be dangerous for vision.

Millions of people have xerostomia, where lack of saliva leads to problems in swallowing or mouth infections, the study said.

"Several problems must be solved before the use of bio-engineered secretory glands becomes feasible," Tsuji's team cautioned, pointing to the need to build up a bank of suitable stem cells.

The paper is published in the science journal *Nature Communications*.

Previous work by the same team has involved "ectodermal" organ regeneration, involving tissue to replenish hair and teeth.

More information: *Nature Communications*, DOI: 10.1038/ncomms3498