

# Lungs can magically heal once smokers stop

It's Never Too Late To Quit As Body Replaces Smoke-Hit Cells With Healthy Ones From Reservoir

**Tokyo:** Smokers can effectively turn back time in their lungs by kicking the habit, with healthy cells emerging to replace some of their tobacco-damaged and cancer-prone ones, a new study shows.

Smokers have long been told their risk of developing diseases like lung cancer will fall if they can quit, and stopping smoking prevents new damage to the body.

But a study published in 'Nature' says the benefits may go further, with the body appearing to draw on a reservoir of healthy cells to replace smoke-damaged ones in the lungs of smokers when they quit.

The study's joint senior author, Peter Campbell, said the results should give new



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hope to smokers who want to quit. "What is so exciting about our study is that it shows that it's never too late to quit."

Some of the people in the study had smoked more than 15,000 packs of cigarettes in

their life, he said. "But within a few years of quitting, many of the cells lining their airways showed no evidence of damage from tobacco."

The study analysed lung biopsies from 16 people, includ-

ing current smokers, ex-smokers, adults who had never smoked and kids, looking for mutations that can lead to cancer.

Genetic changes that appear in the body's cells are a normal part of aging, and many of these mutations are harmless so-called "passenger mutations". But a mutation in the wrong gene in the wrong cell can "dramatically change the behaviour of the cells and instruct them to behave more like a cancer", Campbell said.

The study found nine out of every 10 lung cells in current smokers had mutations, including those that can cause cancer. But in ex-smokers, many of those damaged cells had been replaced by healthy ones akin to those seen in peo-

ple who had never smoked. Up to 40% of the total lung cells in ex-smokers were healthy, four times more than in their still-smoking counterparts.

Campbell said the damaged cells had not been able to "magically repair themselves. Rather they are replaced by healthy cells that have escaped the damage from cigarette smoke".

The precise mechanism by which that replacement occurs is not yet clear, but the study's authors believe there may be a sort of reservoir of cells, waiting for a chance to emerge.

"Once the person quits smoking, the cells gradually proliferate from this safe harbour to replace the damaged cells," Campbell said.

Gerd P Pfeifer, professor at the Van Andel Institute's Center for Epigenetics, praised the study. "It has shed light on how the protective effect of smoking cessation plays out at the molecular level in human lung tissue," wrote Pfeifer, who was not involved in the study.

But the small sample size "raises many questions", Campbell said the key now would be to locate the reservoir of healthy cells and work out how they are able to replace damaged ones. "If we can work out where they normally live and what makes them expand when someone stops smoking, perhaps we have opportunities to make them even more effective at repair." AFP