



## Phoenix from the ashes: Lung tissue damaged by tobacco smoking may be able to regenerate

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What if lung tissue could regenerate after smoking damage and become healthy again – like a phoenix rising from the ashes?

Surprising new research published by Nature<sup>24</sup> suggests that this may be the case. It has been found that cells which escape damage have the ability to repair smoking-related damage inflicted on other cells in the lungs – but only if you stop smoking.

Hundreds of carcinogens are present in tobacco, which cause changes in DNA sequences of cells, resulting in the formation of cancerous cells over time. For years, it was thought that damage in the lungs caused by smoking was irreversible and life-long with an unspoken rule which stated that lung cancer was soon to chase after and find ex-smokers. New research suggests that this may not necessarily be true. The results of quitting tobacco cause lungs to self-repair, noted in people who smoked at least a pack of cigarettes continuously for more than 30 years.

It was also observed that the lungs of past smokers were comparable to people who had never smoked before, because the healthy cells that were able to avoid tobacco-related mutations could replace the damaged cells. It was noted that the majority of cells taken from a smoker's airway had suffered mutations, with cells displaying up to 10,000 genetic alterations. But to the researchers' surprise, a few cells managed to avoid damage to their DNA. How exactly, is as yet unknown. Nonetheless, after an individual stops smoking tobacco, those are the cells that repair the lungs by replacing the damaged cells.

"MAGICAL"

- Dr Campbell, of the Wellcome Sanger Institute, involved in the research<sup>24</sup>

NHS Stop Smoking Services are free, local services providing a range of techniques to help you stop smoking. You can gain access to a stop smoking adviser via a GP referral or by contacting an adviser directly. To contact a stop smoking service in England, please call the free smoke-free national helpline: 0300 123 1044.

### Need a reason to quit smoking?

After you quit, your heart rate drops. In less than 12 hours, carbon monoxide level in your blood drops to normal. In 2-12 weeks, your circulation and lung function improve. Within 1-9 months Coughing and shortness of breath decrease. After only 5-15 years, your stroke risk is reduced to that of a non-smoker, lung cancer death rate is about half of a smoker and risk of heart disease is that of a non-smoker. The longer you stay away from tobacco the more your health can improve – quitting can be challenging but it is possible.

## References

1. Tobacco smoking and somatic mutations in human bronchial epithelium. Yoshida, K., et al. 7794, 2020, Nature, Vol. 578, pp. 266-272. Doi: 10.1038/s41586-020-1961- 1.