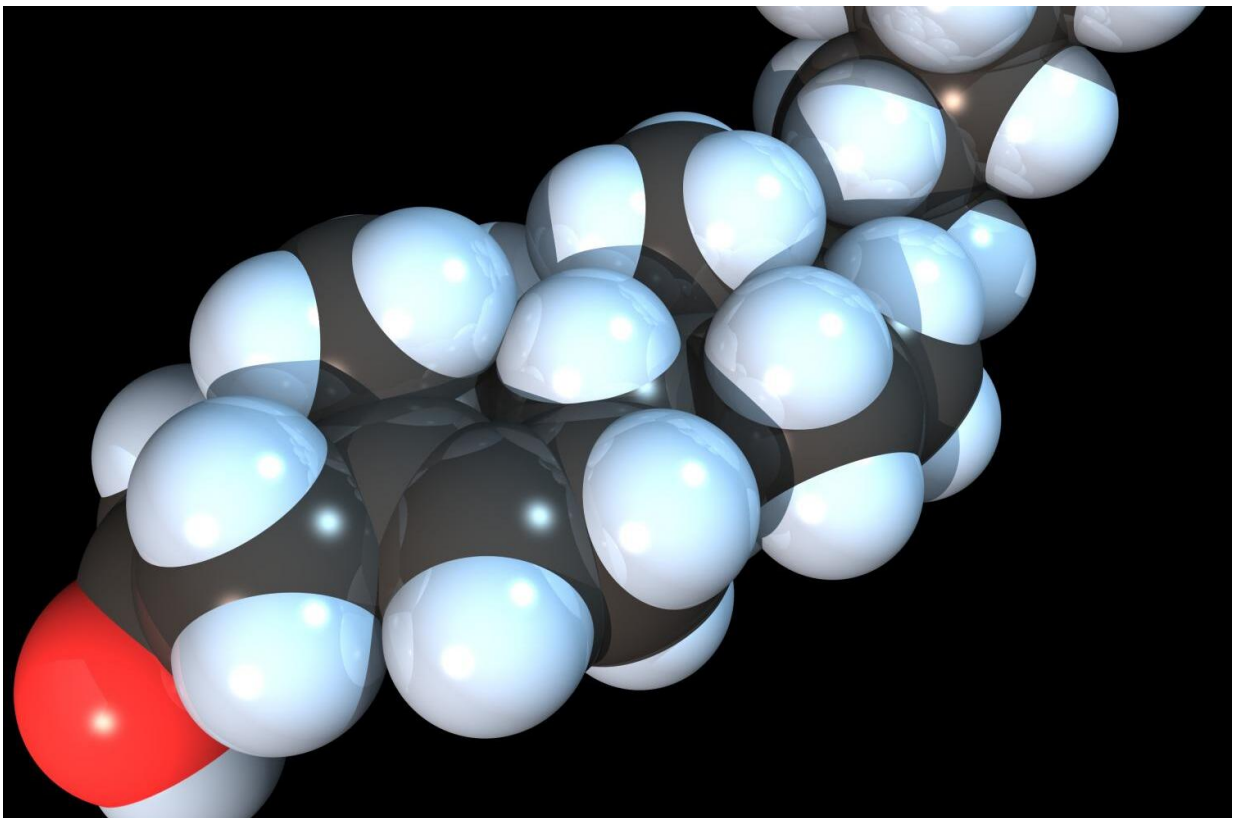


Treating intestine with 'good' cholesterol compound inhibits lung tumor growth in mice

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Space-filling model of the Cholesterol molecule. Credit: RedAndr/Wikipedia

A compound that mimics the main protein in high-density lipoprotein (HDL, or "good") cholesterol significantly reduced the number of

tumors in the lungs of mice, reports a team of UCLA researchers. The findings help explain the connection between HDL cholesterol and reduced cancer risk, and suggest that a similar compound may be an effective therapy in humans.

Previous research, both in lab animals and humans, had suggested that higher HDL cholesterol levels were linked to reduced [cancer risk](#). The team's earlier work had found that small peptide "mimetics," or mimics, of an HDL protein reduced tumor growth in mice, but it wasn't totally clear which immune and genetic mechanisms were responsible for the connection. In the new study, the researchers set out to determine whether and how the compound, called Tg6F, might alter the immune system both in the intestine and in a distant organ (in this case, the lung).

The team used a mouse model of lung cancer, injecting [cancer cells](#) into the tail veins of mice. The cancerous cells migrate to the lungs, where they grow into tumors. One group of mice was given Tg6F orally, starting the day after they were injected with cancer cells, along with their regular mouse food; another group of mice received an inactive version of the compound.

After four weeks of treatment, the number of tumor nodules was significantly lower in the lungs of Tg6F-fed mice—on average, 75 percent lower than controls.

The team also looked at how the compound was exerting its anti-cancer effects, and found that Tg6F altered lipid metabolism in the [small intestine](#), which in turn altered gene expression and the type of immune cells present in both the intestine and the lung. In particular, the Tg6F supplements increased the expression of genes in a pathway that boosts [white blood cells](#) patrolling for cancer, and decreased gene expression in a pathway that facilitates cancer growth.

The findings illuminate the mechanisms by which "good" cholesterol may reduce cancer risk, and underscore how important the small intestine is in exerting immune effects in distant organs. The results suggest that oral compounds may have therapeutic value for treating [lung cancer](#) in humans. The team next plans to look at whether Tg6F also inhibits [tumor growth](#) in other organs of the body.

The study was published in *Scientific Reports*, a Nature journal.

More information: Arnab Chattopadhyay et al. Treating the Intestine with Oral ApoA-I Mimetic Tg6F Reduces Tumor Burden in Mouse Models of Metastatic Lung Cancer, *Scientific Reports* (2018). [DOI: 10.1038/s41598-018-26755-0](https://doi.org/10.1038/s41598-018-26755-0)

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