



Stavros Lomvardas, PhD

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Smell: The Genetics of Odor Uncovered

During the COVID-19 pandemic, some infected people experienced a baffling side effect, widely publicized by the press: a total loss of smell. Gone were the joys of chocolate and other favorite foods. One expert in smell set out to find the cause.

For Stavros Lomvardas, the nose is a masterpiece of evolution. How is it that we can detect so many different scents, a trillion by some estimates? The key lies in the ability of [each neuron connecting the nose to the brain to specialize](#): to select a single odor receptor from among thousands. [Dr. Lomvardas's team](#) has been methodically teasing out the complex details of how this happens.

“Throughout my scientific career, I have been intrigued by problems like this, problems that do not have an obvious solution,” said Dr. Lomvardas.

Neurons, it turns out, can control which of its many receptor genes are active, by having chromosomes make contact with each other in unusual ways. Dr. Lomvardas's team found that the disruption of this genetic architecture by SARS-CoV2 is how the virus robs us of the aromas of perfume and the bouquets of wine. It prevents smell receptors from being created and shipped to the surfaces of neurons.

COVID isn't the only disease to attack our sense of smell. Loss of smell is a harbinger of diseases such as

Parkinson's, and people who perform poorly on smell tests are more likely to develop Alzheimer's disease within five years. So as the science of smell advances, Dr. Lomvardas imagines a future in which a trip to the doctor includes a scratch-and-sniff test.

“Our basic science exploring how smell works has matured enough that it now can point us toward new ideas for medical treatments,” said Dr. Lomvardas.

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