

Smell



For more on smell
visit [nature.com/
collections/smell-
outlook](https://www.nature.com/collections/smell-outlook)

Editorial

Herb Brody, Richard Hodson,
Joanna Beckett, Anne Haggart

Art & Design

Mohamed Ashour, Andrea Duffy

Production

Nick Bruni, Karl Smart, Ian Pope,
Kay Lewis

Sponsorship

Stephen Brown, Nada Nabil

Marketing

Kimberly Petit

Project Manager

Rebecca Jones

Creative Director

Wojtek Urbanek

Publisher

Richard Hughes

VP, Editorial

Stephen Pincock

Managing Editor

David Payne

Editor-in-Chief

Magdalena Skipper

For millions of people, one of the defining symptoms of COVID-19 has been the loss of their sense of smell. Many are now experiencing the world with a diminished or otherwise altered capacity to detect odours. Gone is their ability to enjoy the aroma of food or nature. The sheer number of people affected means that olfaction, for so long overlooked among our suite of senses, is finally stepping into the scientific spotlight.

Much of that newfound attention is medically oriented. Researchers have worked rapidly to understand how COVID-19 brings about the loss of a person's sense of smell – a condition known as anosmia – and why the effect varies between individuals and between variants of the coronavirus SARS-CoV-2 (see page S5). This has led to renewed interest in treating anosmia, which will benefit not only those who have the condition as a result of COVID-19, but also the 5–12% of the general population who already have an olfactory condition (S7). Efforts to improve established olfactory-training techniques could bear fruit quickly, whereas attempts to develop electronic implants to restore a person's sense of smell have much further to go (S12). The potential use of dogs to sniff out human diseases, such as infections or cancer, is also gathering steam (S10).

Away from medicine, researchers are gaining insight into the inner workings of human olfaction. The neurobiology that underpins the close link between smell and memory, which makes certain odours so immediately evocative of another place and time, is yielding its secrets (S2). The influence that smells have on human behaviour, affecting our emotional states and choice of partner, is also becoming clear (S18). And even the seemingly strange discovery of olfactory receptors in tissues and organs around the human body is beginning to be explained (S14). Taking all of these changes together, it seems as if the world has woken up to the special importance of smell.

We are pleased to acknowledge the financial support of Firmenich in producing this Outlook. As always, *Nature* retains sole responsibility for all editorial content.

Richard Hodson

Senior supplements editor

Contents

- S2 MEMORY**
A fragrance to remember
- S5 CORONAVIRUS**
COVID's assault on smell
- S7 TREATMENT**
Restoring scent
- S10 Q&A**
Sniffing out diseases
- S12 IMPLANTS**
Smell by wire
- S14 RECEPTORS**
Beyond the nose
- S18 BEHAVIOUR**
Led by our noses

**On the cover**

Smell is stepping into the scientific spotlight.
Credit: Sam Falconer

About Nature Outlooks

Nature Outlooks are supplements to *Nature* supported by external funding. They aim to stimulate interest and debate around a subject of particularly strong current interest to the scientific community, in a form that is also accessible to policymakers and the broader public. *Nature* has sole responsibility for all editorial content — sponsoring organizations are consulted on the topic of the supplement, but have no influence on reporting thereafter (see [go.nature.com/33m79fz](https://www.nature.com/33m79fz)). All *Nature Outlook* supplements are

available free online at [go.nature.com/outlook](https://www.go.nature.com/outlook)

How to cite our supplements

Articles should be cited as part of a supplement to *Nature*. For example: *Nature* Vol. XXX, No. XXXX Suppl., Sxx–Sxx (2021).

Contact us

feedback@nature.com
For information about supporting a future *Nature Outlook* supplement, visit [go.nature.com/partner](https://www.go.nature.com/partner)

Copyright © 2021 Springer Nature Ltd. All rights reserved.