

# natureOUTLOOK

## TASTE

21 June 2012 / Vol 486 / Issue No 7403



Cover art: Nik Spencer

### Editorial

Herb Brody,  
Michelle Grayson,  
Tony Scully,  
Nick Haines

### Art & Design

Wes Fernandes,  
Nicola Hawes,  
Alisdair Macdonald,  
Andrea Duffy

### Production

Karl Smart,  
Susan Gray,  
Leonora Dawson-  
Bowling

### Sponsorship

Yuki Fujiwara,  
Yvette Smith,  
Gerard Preston

### Marketing

Elena Woodstock,  
Hannah Phipps

### Project Manager

Christian Manco

### Art Director

Kelly Buckheit Krause

### Magazine Editor

Tim Appenzeller

### Editor-in-Chief

Philip Campbell

**T**aste is more than a sensual experience: it is a signal of nutritional value or danger. It has evolved as a vital survival mechanism in mammals (see page S16) and driven epic periods of human history — it was, after all, the quest for spices that helped launch the age of exploration. Yet our understanding of how taste works has lagged behind the other senses.

In the past decade or so, taste science has been on a roll. In 2000, researchers used the newly available human genome data to help identify the receptors that respond to bitterness (S2). Since then, the receptors for sweet, salty, sour and umami (savoury) have also been identified. The exclusive club of basic tastes might be about to admit new members: carbonation, metallic and fattiness.

What's more, taste is revealed to be a whole-body experience; taste receptors are found in the gut, the airways and even on sperm (S7), but the function of many of these sensors remains unclear.

The centrality of flavour to human culture has driven scientists, chefs and the food industry to experiment with new ways of producing familiar and novel tastes (S14) as well as to create a scientific style of experimental cooking (S10). And while the link between smell and taste is well known, studies are showing that the way we experience food is influenced by all five senses (S4).

Individual variation in taste tolerances might help explain why some people tend to be obese (S12), although scientists still struggle with the question of whether taste is an inherent attribute of food or a personal psychological construct (S6). However, while much of taste is subjective, tasting technologies aim to define our eating and drinking experiences with machine-like consistency (S18).

We acknowledge the financial support of Ajinomoto Co., Inc. in producing this Outlook. As always, *Nature* has full responsibility for all editorial content.

### Herb Brody

*Supplements Editor*

## CONTENTS

- S2 GUSTATORY SYSTEM**  
**The finer points of taste**  
From tongue to brain
- S4 SENSORY SCIENCE**  
**Partners in flavour**  
There's more to tasting than the tongue
- S6 PERSPECTIVE**  
**Complexities of flavour**  
Barry Smith sorts the intrinsic from the subjective
- S7 NEUROSCIENCE**  
**Hardwired for taste**  
What are taste receptors doing throughout the human body?
- S10 COOKING**  
**Delicious science**  
Chef scientists are serving up some stimulating dishes
- S12 OBESITY**  
**Insensitive issue**  
Are some people born preferring fatty foods?
- S14 FOOD SCIENCE**  
**Taste bud hackers**  
Ingenious ways to trick people into liking healthier foods
- S16 EVOLUTIONARY BIOLOGY**  
**The lost appetites**  
What tastes sweet to one species is bland to another
- S18 TECHNOLOGY**  
**The taste of things to come**  
Artificial tongues take a sip

*Nature Outlooks* are sponsored supplements that aim to stimulate interest and debate around a subject of interest to the sponsor, while satisfying the editorial values of *Nature* and our readers' expectations. The boundaries of sponsor involvement are clearly delineated in the *Nature Outlook* Editorial guidelines available at [http://www.nature.com/advertising/resources/pdf/outlook\\_guidelines.pdf](http://www.nature.com/advertising/resources/pdf/outlook_guidelines.pdf)

### CITING THE OUTLOOK

Cite as a supplement to *Nature*, for example, *Nature* Vol XXX, No. XXXX Suppl, Sxx–Sxx (2012).

### VISIT THE OUTLOOK ONLINE

The *Nature Outlook Taste* supplement can be found at <http://www.nature.com/nature/outlook/taste> It features all newly commissioned content as well as a selection of relevant previously published material.

All featured articles will be freely available for 6 months.

### SUBSCRIPTIONS AND CUSTOMER SERVICES

For UK/Europe (excluding Japan): Nature Publishing Group, Subscriptions, Brunel Road, Basingstoke, Hants, RG21 6XS, UK. Tel: +44 (0) 1256 329242. Subscriptions and customer services for Americas – including Canada, Latin America and the Caribbean: Nature Publishing Group, 75 Varick St, 9th floor, New York, NY 10013-1917, USA. Tel: +1 866 363 7860 (US/Canada) or +1 212 726 9223 (outside US/Canada). Japan/China/Korea: Nature Publishing Group — Asia-Pacific, Chiyoda Building 5-6th Floor, 2-37 Ichigaya Tamachi, Shinjuku-ku, Tokyo, 162-0843, Japan. Tel: +81 3 3267 8751.

### CUSTOMER SERVICES

Feedback@nature.com  
Copyright © 2012 Nature Publishing Group