



ECRO  
Newsletter

Spring 2014

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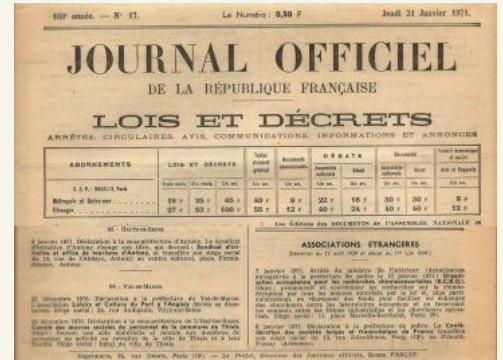
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**Chemical Senses: Editor-in-chief:** *Prof. Wolfgang Meyerhof*

Top picture: the birth certificate of ECRO, 1971

Bottom picture: the ECRO Board in a photo taken last year. Prof Meyerhof, who was not present, has been included and overlooks from his frame on the wall.



## Editorial

When the identification of olfactory receptors was published by Linda Buck and Richard Axel back in 1991, many of us had the feeling that the major breakthrough in olfaction had been made and any subsequent work would just add peripheral information and refinements, resting on the solid base of that unique most important discovery.

This could be still true in a sense, but certainly does not mean that olfaction is a field where important research has been all done and only crumbs are left.

On the contrary, the discovery of olfactory receptors with all the complex wiring connecting the periphery to the brain has stimulated novel interest in olfaction with a an ever increasing trend. This is witnessed by the number of papers published in top journals and that of new research groups joining the study of olfaction from many different perspectives. But it is also very interesting to observe that new questions are being addressed and that connections with other research fields reveal unexpected horizons.

With reference to some papers and news reported in this issue, I would like to focus on two aspects among these that are currently hot and boiling with exciting ideas.

The first is the increasing number of reports describing olfactory receptors in organs other than those associated with chemoreception. Such acquired knowledge helps us to put olfaction in a wider perspective and at the same time provides other tools for studying chemical communication within the body mediated by different kinds of receptors.

Although the search for olfactory receptors was mainly guided by the idea that this family of proteins should be specifically expressed in the nose, soon after their discovery the same genes started popping up in other organs. The first of these were those identified in sperm cells. This was hardly surprising when thinking of the long and difficult journey these cells have to make to eventually find the egg. It would have been reasonable to assume that they would be guided by odour cues, even if the word is not very appropriate in this context and we should rather speak of chemical attraction or chemotaxis. On the other hand, bacterial chemotaxis had been known long before scientists got interested in olfaction and some of the biochemical mechanisms underlying this phenomenon had been elucidated very early.

Then olfactory receptors came out sprouting everywhere, in the most unlikely organs, such as heart, gut, liver, blood.

Obviously, they must be involved in some kind of chemical communication between cells, although their relationship with olfaction would be in some cases very hard to support. The latest news is that some olfactory receptors are expressed in the cells of our skin and, according to the interesting study of Hanns Hatt they might help healing wounds. A door has been opened revealing a completely new world to explore, and applications look extremely interesting.

More and more, olfactory receptors appear as a large family of proteins adapted both to detect odours and to perform other tasks, still in the field of chemodetection. We might suspect, therefore, that endogenous ligands should exist and their discovery can be guided by studying the structures of their corresponding receptors. So, we are presented with a scenario where the same receptor can be activated by an endogenous ligand, a messenger synthesised in the same organism or in the same tissue, and at the same time can respond to a series of chemicals coming from the environment. The first class of ligands certainly involves water soluble compounds, likely peptides or their derivatives, in the second class, as we all know, we find that they are volatile hydrophobic chemicals. Is it possible that the same receptor, while being very specific, can be activated by such diverse molecules? We have several examples in nature. Think of the opioid receptors, specific to detection of endorphins, but at the same time responsible for the effect of morphine and related drugs. In this case, it is just a coincidence that morphine can produce its effects, but with olfactory receptors the story might be more complex, as the same receptors have developed to perform both types of functions during millions of years of evolution.

But which function came first? Was it the receptor in the skin, first involved in healing wounds, that was later adopted to smell sandalwood or the other way around?

The second topic worth discussing is the stronger and more conscious interest we take in smell of our everyday life, from food to environment, pleasant and repulsive odours, producing also a need to store our olfactory images and experiences and share them with our friends, using telephones, tablets and computers, as we do with sounds and images.

Psychology and electronics are the main disciplines involved, that, however incredible as it might appear, become connected in such circumstances.

It is a fact that we are more and more aware and concerned about our olfactory environment. We are getting choosy about eating and more and more we select foods on the basis of their flavour; we are increasingly demanding about a clean environment, free of “foreign” odours, but at the same time we like “natural” scents in our places of work and living; we pay attention to the odour of people around us; and we would like to share our olfactory experiences.

This attitude can explain to some extent the excessive interest in the possibility of sending and receiving odours and the abnormal proliferation of devices promising wondrous performances, often no more than science fiction.

Is it possible to send a smell to a remote location ? To send any kind of message we need a transmitter and a receiver. The transmitter analyzes the signal (light, sound, odour, etc.) and generates an electric signal that can be processed and delivered travelling along a cable or on top of an electromagnetic wave. At the other end of the line, the receiver translates back the electric signal into the original kind of message. We have excellent devices to analyse and reproduce light and sounds with extreme accuracy.

What about smells? An instrument able to analyse a complex odour (an electronic nose) is still in the realm of science fiction. The performance of currently available sensors and biosensors is not even vaguely comparable of what we expect from an even rudimentary electronic nose. Still more problematic is the reproduction of odours: the only device capable of reproducing an odour is a bottle with a chemical or a mixture of chemicals endowed with that particular odour.

This means that to some extent delivering an odour message is feasible, but the performance of any instrument we can build with the current technology, both for analysing and reproducing odours, would be extremely poor and not acceptable.

Here we come back to psychology and our sophisticated requirements for some special particular odours. We are not happy with something that vaguely reminds us of strawberries, we want to smell, and share with our friends, that particular attractive and captivating smell of strawberries we have tasted on a special occasion.

While a crackling phone or a poor quality image obtained from the net could still be useful and sometimes acceptable, with odours is a completely different story. Because we are very demanding and a poor reproduction of the strawberry odour could become repulsive. If we think of using olfactory messages in advertisements, the results could be disastrous. Perhaps we might see interesting developments in this hot field, but not likely in the near future.

I wish all of you pleasant and relaxing holidays.

### **From the President**

Dear ECRO members,

In September we will have our annual ECRO congress in Dijon. Luc Penicaud and colleagues from the Centre des Sciences du Gout et de l’Alimentation are actively working to combine scientific and social events between 10 and 13 September 2014. This is another important appointment for all scientists interested in chemosensory systems, as everybody will have the possibility to interact with other people working in same field. It is a great opportunity for young scientists to meet and discuss also with the more senior colleagues in a friendly atmosphere. The early registration deadline is on August 1st, 2014, visit the website of the congress and register at:

<https://colloque6.inra.fr/ecro2014>

It is still possible to submit an abstract for a poster presentation, if you cannot do it through the web site, do write to the local organizers and join the chemosensory community in Dijon!

The elections for the ECRO board serving for the next two years are open on the web based voting system. Each member with an active 2014 membership can login on the ECRO website with email and password, click on Voting in the main menu and participate to the elections. The last day for voting is August 11, 2014.

The ECRO board has selected the location for ECRO 2015 and information about dates, city and the local organizers will be communicated at the Dijon meeting. In 2016 we will have two meetings. The first one will be the XVII International Symposium on Olfaction and Taste (ISOT), organized in Japan <http://www.isot2016.com/welcome.html>. ISOT 2016 is co-hosted by the Japanese Association for the Study of Taste and Smell (JAST) along with Asian and Oceanian regional societies (AACSS: Australasian Association for ChemoSensory Science, and KoSCI: the Korean Society of Chemoreception and Ingestive behavior). The second meeting, usually held in September, will be our annual ECRO Congress. The ECRO board is looking forward to receive suggestions for locations for ECRO 2016 and for the following years from ECRO members. Please do actively participate by sending suggestions for activities to the ECRO board. Feedback is always very important to constantly improve.

I thank Masha Niv, who started the ECRO group on Facebook to be used for rapid and informal communications. At present the ECRO Group has 56 members and you are welcome to join at: <http://www.facebook.com/groups/355987897804124/>

Finally, I would like to end this short note by thanking all the members of the ECRO board with whom I collaborated in these years to promote chemosensory research. A very special thanks to Krishna Persaud, our Treasurer, who takes extremely good care of the finances and, together with Didier Trotier, our General Secretary, sends travel grants to the several students supported by ECRO for their participation to meetings or visits to other laboratories. Krishna and Didier do a lot of work behind the scenes and we do not realize how much of their time they dedicate to the ECRO community. Thanks also to Teun Dekker, our web master, who has often to solve unexpected problems with the web site. Finally many thanks to Paolo Pelosi, whose creativity in preparing the ECRO Newsletters constantly surprise us.

I wish you a pleasant summer and hope to see you in September at ECRO 2014 in Dijon.

*Anna Menini*

### **Treasurers Report July 2014**

For the year January-December 2013, ECRO reported 200 paid up members and as a result we received funding from "The Elsie Werner-Polak Memorial Fund in memory of our niece gassed by the Nazis in 1944 at age 7"- Donors: Ernest and Ghislaine Polak. This annual donation is divided between ACHEMS and ECRO on the basis of membership numbers declared for the previous year. So our receipt from this fund was 8736 Euro. Our total assets at the end of June 2014 was 73659 Euro, together with another 19198 Euro in our conference account that will be used to support future conferences.

Unfortunately, this year we did not receive any donations from industrial sources, and this needs to be addressed in future. We are pleased to announce the following grant awards and we encourage young scientists to apply to ECRO for grants - full details are available on the ECRO web site.

### **ECRO 2014 GRANTS AWARDED ACHEMS 2014**

BÖRNER Carolin, Germany

KRAJNIK Jacqueline, Austria

### **ECRO 2014 Congress**

AMSELLEM Sherlley, Germany

BADEKE Elisa, Germany

DI PIZIO Antonella , Israel

GOMEZ-CHACON Beatriz, Spain

GUZMAN PINO Sergio, Spain

LAKTIONOVA Tatiana , Russia

PIETRA Gianluca , Italy

REINGRUBER Jurgen, France

ROZENKRANTZ Liron, Israel

SAITO Hiroki, Japan

MORISSON Filomene, USA

*Krishna Persaud*

*(Executive Secretary and Treasurer, ECRO)*

# NEWS IN BRIEF

## Smells and phones

Cell phones are a huge business all over the world (and one of the most dreadful nuisances). No wonder that a lot of research in science and pseudoscience is focused on new features that can be applied to phones. Smell is still the big missing element, despite the many attempts and claims.

Almost everyday we come across breaking news that we can send scents through the phone. It is always the same unconvincing story, but apparently such news are efficient in keeping the interest high on these diabolic devices and urging naïve people to change their cell phones every couple of months.

Most of such “discoveries” come from Japan. And again it is a Japanese company called “Chaku Perfume” claiming its new product Chat Perf is designed to send smells via iPhone. An attachment made up of an atomizer and a smell tank fits into an iPhone’s dock port.

Of course there is nothing new technologically. The receiver needs a collection of all the perfumers that can be “sent”. The caller could just tell the receiver to open bottle no. 25 (smelling of lemon) and the trick is done. The novelty of this application is that it is a signal send through the phone which opens automatically the bottle. In this way, when you receive an odour message you have no choice, you are just blasted with the odour in front of your nose. We have reasons to believe that all the odours stored in the container attached to the phone are fragrances and pleasant smells, but... when the cat is out of the bag, you can expect anything.



How many odours can you send? Just the limited number stored in the container, people will get tired very soon and this is good for the devilish company, that is ready to sell you another set of odours to play with.

Cell phones have already become a terrible nuisance all around the world and the main source of acoustic pollution. We only needed another application to add odour pollution to these instruments of torture!

When will a company come up with a phone able to make coffee (real coffee, not just the smell) and is NOT able to receive calls?

**Another story is the alarm clock that wakes you up with the scent of sizzling bacon.** It is again a phone application: at the set time you woken-up by the noise of sizzling bacon and the characteristic smell is

released at the same time.

Who wants it? Would’nt you rather prefer an old fashioned alarm clock connected to an electric coffee machine?



# The ultimate oPhone

So far we have been talking about science fiction and commercial traps.

But if you want something really scientific, likely to change the style of communications, turn to the oPhone, the brainchild of David Edwards, a Harvard professor of Biomedical Engineering.

The device is supposed to send “oNotes” via Bluetooth and smartphone linked to the recipients oPhone. Aromas are generated by computer chips containing small pellets of several odours, that can be combined in different ways.

This is what the inventors claim. And according to the many enthusiastic comments from the media we should think they have finally hit the target.

*from the press:*

*Next year, instead of flowers you may be able to just send the scent. A Paris laboratory has introduced a new kind of smart phone that will send scents to the person on the other end of the call – the technological breakthrough is called the oPhone.*

*Harvard scientists successfully transferred the first scent from Paris to New York on Tuesday morning via an iPhone app. The champagne and passion fruit macaroon-scented message was transferred via a new communication platform called the oPhone.*

*Odors are first captured in wax after they are perfected using “The Nose” – an aroma expert at Le Lab, Marlène Staiger – who **deconstructs the scents**.*

*Edwards said that the initial four chips that will come with the first oPhones can be combined into thousands different odors – produced for 20 to 30 seconds – creating what he calls “**an evolution of odor.**”*

*Edwards says the device might eventually help people who have lost some of their memory. “We think there **could be help for Alzheimer’s patients**, related to the decline and loss of memory and olfactory sensation,” he says.*

*The oPhone may be the **perfect gift for a family member who is missing that special someone.***



**What is really new about this instrument?**

1. It uses a larger number of fragrances
2. Can mix them in different combinations



Is that enough to obtain “natural” odours?

Not yet, according to other comments of the press from someone who has actually tried the device:

*The first caveat is that the system **didn’t capture a smell to transmit**, but rather tried to approximate the smell by drawing on a library of scents, like “tropical” or “creamy sour.” And while the device definitely released a scent, **it wasn’t easily identifiable**. Rather, it had **a tangy, artificial aroma**.*

It is very difficult indeed to reconstruct an odour that could be recognised as natural and trigger all the emotions connected with a particular olfactory experience.

There is another important observation we need to make with reference to all these devices smuggled as “Odour Phones” or something like. These terms suggest “transmission”. Now, transmission needs an encoder at one end and a decoder at the other end. We need a device to convert a message (in this case an odour) into an electric signal that can be send and reconverted back into the original message at destination.

These O-Phones or like DO NOT send messages. They just send instructions to go to a sort of olfacto-library and pull down odour numer 28. The only novelty is that the message is not given verbally, but is sent directly to a robot which “opens the bottle”.

Fair enough, such system could still be useful and interesting, but we have strong doubts that the few little pellets stored in the device could reproduce the characteristics of a well equipped collection of flavours and fragrances like those used by perfumers and food flavorists.

The new device has been presented last June, but so far we could not find any related scientific publication.



# Smell and the City

## To smell or not to smell?

**Are our cities too smelly? or are we losing the old familiar smell of our cities? There is a lot of talking and debating around this simple question. Both answers are correct.**

The simple answer is that we want to get rid of bad odours, car exhaust fumes, sewages, decomposing rubbish, but are ready to welcome the typical scents of past times, the smell of bread coming out of the bakery, the captivating roast meat from the kitchen of a restaurant, toasted coffee, frying doughnuts, the scent of lime trees.

But, can we draw a dividing line between good and bad odours?

SMELL AND THE CITY is a wide project promoted by Victoria Henshaw, a lecturer in urban design and planning at the University of Leeds. On her website:

<http://smellandthecity.wordpress.com/>

you can find a lot of information on events occurring ever more frequently in different cities to make people aware of characteristic smells. The idea is to build a sort of SMELLSCAPE, like a landscape, a map of odours describing the city under a different aspect. No wonder, odours can be remembered with better clarity than sights, even after many years, and can bring back vivid memories of places with strong immediacy.

Last March an interesting exhibition took place in London at the Royal Academy of Arts, entitled '[Sensing Spaces: Architecture Reimagined](#)' and offering an original sensory experience including smell.



Particularly interesting from our point of... smell were the two spaces created by Japanese Architect Kengo Kuma. As you enter the first dark room (picture below) through a heavy curtain, you are welcome by a soft, smoky odour. This is the first sensation before your eyes become accustomed to the dark a start detecting the bamboo structures reaching upwards. A sense of peace is reinforced by the smell of Hinoki (Japanese Cypress) emitted from the bamboo structure. As you move through the first room - Kuma explains - "...the smell deepens, so the lighting conditions and the intensity of the smell change simultaneously" and upon entering the much smaller second room, you are enveloped by a second structure, and the scent of tatami is released, that Kuma associates to sleeping place as a child.

During the event, Victoria Henshaw gave lectures and guided some smellwalks in the area around the Exhibition.

The initiative of Victoria Henshaw has stimulated other people who want to experience their city through the nose. In the following page there is a smelly report of Liverpool by Kerry Morrison.

# The Smellscape of Liverpool

**Kerry Morrison is an in-situ environmental artist undertaking a PhD at the University of Salford, and also author of the blog [nature exposed](#).**

**Here we reproduce from her website what she reports on the smell of Liverpool**

I am not the first to write about *this stinking city* <http://www.sevenstreets.com/city-living/this-stinking-city/>

and I doubt – nay, hope – I will be the last. There is much to be said about the stimuli of smell; and, our sense of smell is more acute than we may think: it informs us about the world around us in many ways. Little smelly particles – called odorants – are constantly drifting up our nostrils as we breathe in. But, only distinct, pungent smells seem to grab our attention, like coffee, petrol, and fish ‘n’ chips...

At times we consciously employ our sense of smell, for example, sniffing milk to be sure that it has not turned sour before we pour it into our tea. But, more often than not, we don’t consciously smell – our landscape. Odour seeps into our olfactory bulb and what our brain does with it from there, somehow, seems out of our control inasmuch as we don’t register the scents of the everyday that surround us. Ambient odour become a melange, like a mixed melody or a white noise, whereby frequencies/fragrances merge creating a flat spectrum of smell not really distinguishable as anything in particular. So, to try to deliberately smell landscape – as we might view landscape – requires concentrated effort: a nosing of the air with intent.

Journeying through Liverpool, on my bike, I wanted to smell the city, and in doing so, try to form a smell memory of Liverpool: a memory that would distinguish Liverpool from other cities I have been in and take me back to this chapter in time: blissfully indulging myself in the hunt for urban brownfields – *counterculture nature in our Liverpool landscape*. I wanted a Liverpool smell memory. There’s nothing quite as evocative as a smell. Odours have the ability to thrust us back in time – unlocking a memory. There’s nothing quite as evocative as a smell. Odours have the ability to thrust us back in time – unlocking a memory linked directly to a place, person, or thing (living or inert) that is awaked upon encountering that smell once more: the Proust Phenomenon

So, I tried to cycle open nosed: sniffing up the odorants to get an olfactory sense of the city. Certain areas – landscapes – are more vivid than others, and none more explicit than the docks, specifically, Regent Road and its subsidiaries, a landscape of productivity, human activity, life, and decay. From Princes Dock to Millers Bridge, street after street emitting odours that I could distinguish and name and odours that were distinct but I had no name for. Cycling through these smelly streets, breathing in deeply, soaking up the scents as I weaved between magnificent warehouse buildings, dodging potholes, nosing the air with such intent that (at times) I could taste the flavour of the fragrance in the back of my throat.



Liverpool docks, brimming with aesthetic allure, smell great. With an aesthetic spectrum of smell: from the sublime to the disturbing; stench that can make you heave followed so closely by the mouth-watering smell of toast, or sweet smells of wild flowers that can transport you to the countryside and cottage gardens. As I cycled these masculine streets I became acutely aware of the aromas of nature in this highly industrious neighbourhood. This supposedly grimy landscape is far from void of nature; and this landscape’s nature added a fresh nose that I appreciated. And to this end, whether you can see nature or not matters not when it comes to the nose. Sniffing Liverpool docks as I did has created a complex and personal sense of place where sounds and sights are locked together with smells. These smells are now retained in my olfactory memory. And, in future years, perhaps a meld of molasses, oil, and buddleia will trigger the Proust Phenomenon: casting me back to this place, this time: *my* Liverpool.

# Boosted Impact Factors...again!

## Pandemic alert!

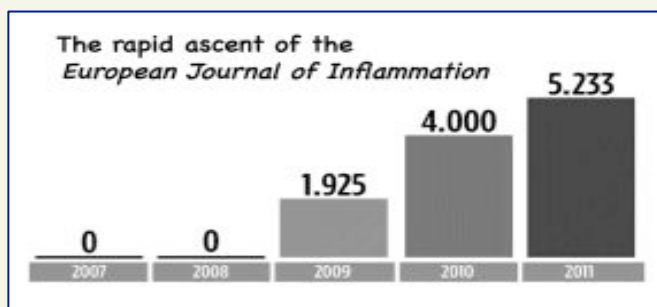
## From Italy to Brazil the virus is spreading

In the last issue we jokingly presented five easy recipes to improve the Impact Factor of a journal. It was far from science fiction! Even the most unethical, crooked and disreputable method we had proposed has been actually adopted!

Last February, Italian newspapers reported the news that Pio Conti, a professor of Immunology at the University of Chieti in central Italy, had been at the centre of a fraud.

Pio Conti owns a company named “Biolife”, which published six scientific journals, besides selling biological and pharmaceutical products, dietary supplements, cosmetics and others.

Three of his six journals, *European Journal of Inflammation*, *Journal of Biological Regulations* and *International Journal of Immunopathology*, have attracted the interest of Thomson Reuters for the suspiciously rapid increase of their impact factors. In fact, the three journals had been heavily cross-citing one



another with over 1,000 citations each year. The cunning professor was confident he would not be caught, because he avoided citing papers of the same journal, but Thomson Reuters spotted the easy trick and have suspended the three journals for one year from its list. Many of the authors on the relevant papers are also at that university. Conti told Nature that he regretted that the anomalous citations had occurred, but that “we have no quick explanation of the patterns”.

In Brazil, a similar approach was adopted by Mauricio Rocha-e-Silva and other editors to raise the the Impact Factors of their journals. To avoid self-citations, they cross-cited papers between journals of different editors. As reported by Richard Van Noorden in Nature News (August 27, 2013):

*Because each article avoided citing papers published by its own journal, the agreement flew under the radar of analyses that spot extremes in self-citation – until 19 June, when the pattern was discovered. Thomson Reuters, the firm that calculates and publishes the impact factor, revealed that it had designed a program to spot concentrated bursts of citations from one journal to another, a practice that it has dubbed ‘citation stacking’. Four Brazilian journals were among 14 to have their impact factors suspended for a year for such stacking. And in July, Rocha-e-Silva was fired from his position as editor of one of them, the journal Clinics, based in São Paulo.*

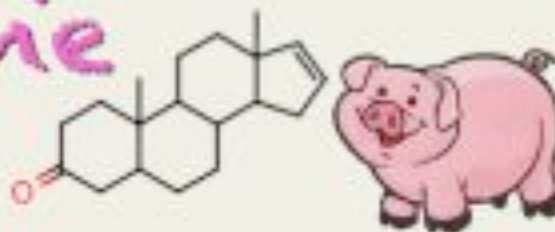
*“We’ve been caught wrong-footed,” says Rocha-e-Silva, a retired physiologist. The editors of the other three Brazilian journals collared by Thomson Reuters remain in place. In addition to these four journals, “there are a few others which played a part in this game, and they escaped”, he says.*

I can also add, based on my personal experience, that some editors encourage authors to cite papers recently published in their own journal, suggesting that a manuscript could be more favourably considered for publication after the authors added a few appropriate references...

**It is a multifaced virus, changing and adapting very rapidly and infecting good science. Is it time perhaps to reconsider the importance of Impact Factor?**

# The hidden power of androstenone

It could be the best way to calm your dog and stop it from barking



**“A serendipitous discovery” is how John McGlone defines its finding that spraying androstenone on a barking dog has the immediate effect of calming it down.**

John McGlone, who works in animal behaviour at the University of Texas, tried to spray the pig pheromone androstenone on his dog while he was barking. The dog immediately stopped barking and became calm and relaxed. (McGlone, Thompson and Guay, 2014 "Case Study: The pig pheromone androstenone, acting as an interomone, stops dogs from barking", *The Professional Animal Scientist*, vol 30, p 105).

How does this molecule act? "I don't really know how it works, that's the honest answer," says McGlone.

This accidental finding can have enormous and important applications. Does this molecule work for other mammals? Androstenone is the volatile messenger of dehydrotestosterone, a male hormone, found in the urine and other secretions. This hormone is not volatile, but can easily generate androstenone by loss of a molecule of water, one of the strongest known odorants. Androstenone has been known for a long time as the boar pheromone. It is very abundant in the saliva of male mature pigs and has the effect of making the female more receptive.

In other mammals, including humans, it is found in urine and sweat, but its role in chemical communication has not been much investigated.

Some reports of dubious credibility report this and related compounds as human pheromones and some companies have gone as far as selling them in spray bottles claiming they can attract members of the other sex just like flies on rotten food. As a matter of fact, androstenone smells like stale urine, at least to those of us who can smell it, only about half of the human population with no difference between genders.

But the question is still open on roles of androstenone and structurally related compounds as semiochemicals in other mammals.

I could contribute with an anecdote from my own personal experience. Many years ago, while I was working androstenone and had it all over my clothes, I was approached out in the fields by an intrepid horse (without having been introduced to each other), who firmly grabbed my arm with his mouth – without doing me any harm – and tried to pull me away. I was too much occupied to get free from its strong mandibles and run away to notice its sex or to ask his/her feelings.

Certainly there is still much to be investigated about this interesting molecule. In the meantime, we cannot fail to notice that there is good news for burglars! No need for poisoned meatballs if a fierce dog is on your way, just use a whiff of androstenone.



# Reversed sex



Some insects have exchanged their sexual roles. Males produce sperm in their "vaginas", females go and vacuum-clean with their "penises".

Yoshizawa K., Ferreira R.L., Kamimura Y. and Lienhard C. (2014) Female Penis, Male Vagina, and Their Correlated Evolution in a Cave Insect. *Current Biology* 24, 1006-1010.

However incredible it might sound, this is what an international team of scientists, led by Kazunori Yoshizawa from Hokkaido University in Japan has discovered in some caves of Brazil.

The new genus of insects, named *Neotrogla* (Psocodea: Prionoglarididae) and looking a bit like flies, includes four species which are the only known examples of this most bizarre sexual behaviour.

Copulation is started by the female which inserts her complex penis-like organ, called the gynosome, into the males' vagina-like opening. Then the gynosome inflates and tiny spines on anchor the female to the male. The couple remains in this configuration for up to 70 hours, while the female carefully scoops all the sperm from the male's "vagina".



The researchers think that this strange sexual behaviour developed as a consequence of extreme conditions in which the insect live. The caves are very dry and food is scarce.

During prolonged copulation (~40-70 hr), a large and potentially nutritious ejaculate is transferred from the male via the gynosome.

The researchers also report that females could receive an additional nutritional benefit. In fact, males feed females with "nuptial gifts" – capsules of food – together with their sperm. The invitation to the banquet may explain why females hook on the males very tightly without letting them go for as long as three days.

If you still had doubts about which one is the female, now everything should be clear.

It would be interesting to investigate for the presence of Odorant-Binding Proteins or Chemosensory Proteins in the sperm of these insects. The presence of such proteins in the sperm or more generally in the reproductive organs of insects has

been related (but not always) to a role as pheromone carriers. One example is that of deterrent pheromones that the male use to tag "his" female to keep other males away.

In this context, where the female makes the first move and leads the all play, what would be the role of pheromones and their binding proteins?



The female organ, the so-called "gynosome" looks more like an extendable penis with a

# RECENTLY PUBLISHED

**Skin cells smell the scent of sandalwood and repair wounds**



Busse D, Kudella P, Grüning NM, Gisselmann G, Ständer S, Luger T, Jacobsen F, Steinsträßer L, Paus R, Gkogkolou P, Böhm M, Hatt H, Benecke H. (2014) A Synthetic Sandalwood Odorant Induces Wound Healing Processes in Human Keratinocytes via the Olfactory Receptor OR2AT4. *J Invest Dermatol.* Jul 7. doi: 10.1038/jid.2014.273. [Epub ahead of print]

One of the important criteria that guided Linda Buck and Richard Axel in their successful search for olfactory receptors was the assumption that they should represent a multigene family specifically expressed in the nose. During the last decade, however, olfactory receptors have been reported in different organs. At least 150 of the 350 expressed in nose have also been detected in other tissues, such as sperm cells, gut, heart, blood cells and liver. And now we can add keratinocytes, the main skin cell type.

But it would have been hard to imagine that olfactory receptor could be housed in skin cells. We know that skin contains glands secreting odours and therefore skin smells... but in a passive sense.

Why should the skin be able to sniff around the environment? Nothing to do with olfaction or chemoreception. Apparently olfactory receptors on the skin fulfill a completely different function: they are part of the healing process.

In fact, the Authors found that applying a sandalwood odorant, SANDALORE (reported on top), to a wound, this would heal about 50% faster than a control. Moreover, silencing OR2AT4 was enough to abolish the effect, showing that the process is triggered by this specific olfactory receptor. The effect of the ligand is also rather specific: another sandalwood odour, BRAHMANOL, structurally very similar to sandalore, produce similar results, but several other odorants were ineffective.

This interesting finding has generated a series of misleading titles in the media, such as:

*Human Skin Can 'Sniff' Odors* or:

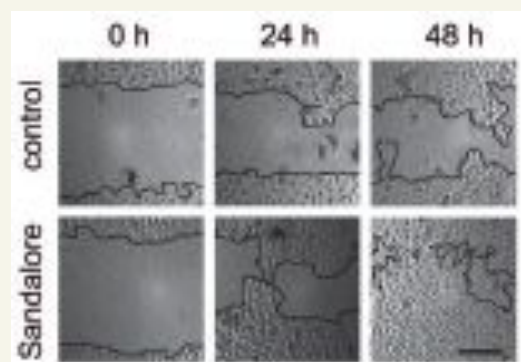
*Perfumes Can Help Prevent Aging*

very suitable to attract the attention of the layman, but certainly not providing the correct information.

It is clear that olfactory receptors have been adapted to different functions because of their structure and efficiency, much like lipocalins include odorant-binding proteins of vertebrates, but many others that have nothing to do with chemical communication.

We can now ask why the sandalwood odour is so specific to promote healing. Is it possible that another natural chemical, produced by the wounded tissue, is the endogenous ligand, while sandalore mimicks in some way the structure of this elusive compound? This would also explain why the Authors had to use a concentration of sandalore 1000 higher than what is required by the same receptor in the nose to be activated.

Thanks to this exciting piece of research, a new fascinating area of investigation has been opened in front of our eyes... ehm... of our nose!



# Olfactory receptors finally hooked

K. Kuhlmann, A. Tschapek, H. Wiese, M. Eisenacher, H.E. Meyer, H.H. Hatt, S. Gejcklaus, B. Warscheid (2014) The Membrane Proteome of Sensory Cilia to the Depth of Olfactory Receptors *Mol Cell Proteomics* 13: 1828-1843.



Using proteomics tools, researchers at Bochum University and other German research institutions have identified 62 olfactory receptors in the mouse at the protein level.

It might not look so impressive, given the more than thousand genes present in the mouse genome encoding olfactory receptors. But this is the first time that the presence of olfactory receptors has been clearly demonstrated at the protein level.

Recently, the easy availability of transcriptome and genome analysis has witnessed a proliferation of papers describing little more than a list of genes detected in some species or organ. Often, such reports assume that all the encoded proteins should be there expressed and active. But we know that this is not always the case.

It is fortunate that proteomic tools have dramatically improved in the last few years and still keep rapidly improving.

In particular, the technique called "shot-gun" has provided a very sensitive tool to analyse protein composition at concentration levels precluded only a couple of years ago.

The relatively wide adoption of this technique has produced a revolution analogous to that triggered by the introduction of the electron microscope.

If the number of 62 detected olfactory receptors seems too small, we should consider also the possibility that not all of the thousand genes may be expressed as proteins.

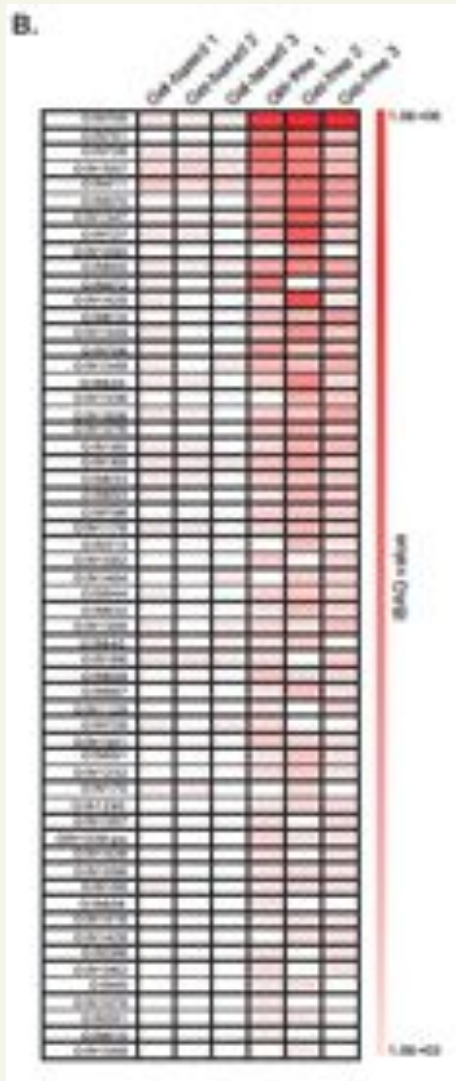
Certainly, as the Authors point out, we do not expect all of them to be expressed at the same level as proteins.

Instead, in their research the Authors found a large diversity in their expression, spanning three orders of magnitude. In the Figure, colour intensity indicates calculated relative abundance (from E+06 to E+03).

We know that accurate quantitative measurements cannot be obtained by the shot-gun approach, but methods have been developed to indirectly evaluate the gross relative abundance of the proteins detected.

The large range reported in this paper matches the diversity in gene expression, as measured by intensities of PCR bands, spanning an interval of about 300.

Next question is: what about the missing genes? are they not expressed at all, or expressed at very low levels? In any case, the 62 of this work might be the most important. Perhaps in the end olfactory coding could not be so forbiddingly complicated after all.



# The best pH meter? A catfish

J. Caprio, M. Shimohara, T. Marui, S. Harada, S. Kiyohara (2014). Marine teleost locates live prey through pH sensing. *Science* 344, 1154-1156. DOI: 10.1126/science.1252697

## The Japanese catfish finds its prey by detecting pH gradients of 0.1 units

It is not always olfaction and taste, at least in a classical sense. Because, after all, detecting acidity is one of the five taste modalities. The Japanese catfish, *Plotosus japonicus*, however, has developed an extremely sensitive organ that can detect changes in the pH of water as small as 0.1 units.

What determines the change in pH is the carbon dioxide released by tasty polychaete worms, the main food of the Japanese catfish.

These worms live in small caves and tunnels, well protected from the view of predators, but not so much in the end. They breathe and the released carbon dioxide gives them away. The fish measures the pH and when it is just a bit lower than the usual 8.1-8.2 sure enough there is a worm, and the fish sucks it out of the hole.

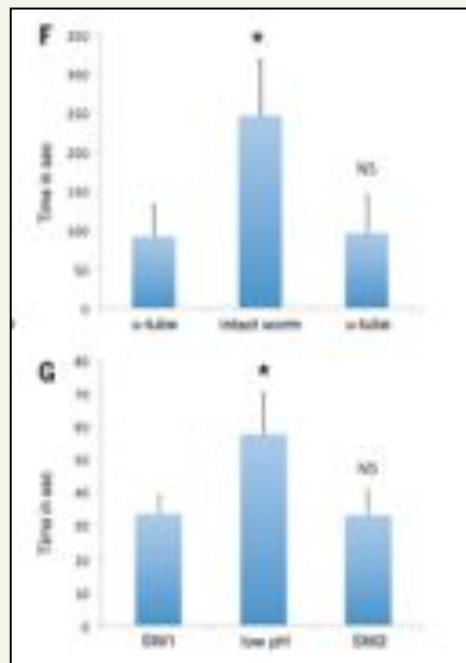
To find out how the fish could detect the worms, John Caprio first tried several amino acids and other odorants with no effect. It took a lot of imagination to turn to carbon dioxide as potential semiochemical. However, it is not even this molecule the real messenger, but its effect on pH. In fact, Caprio was able to attract these fishes just by lowering the pH of seawater with hydrochloric acid.



Many insect species can measure carbon dioxide with accuracy to monitor the health of leaves or for mosquitoes to find their host and get a blood meal. But this is the first case documented in vertebrates. It is likely, according to John Caprio, that this way of finding prey through their breath has been adopted by other fish species dwelling in deep water.

This is certainly a very important and new discovery and the first question is whether this specialised sensory system is characteristic of this species or could be shared by other fishes.

There is also a serious concern suggested by this work. With such a narrowly tuned pH sensing of this and perhaps other aquatic animals, the current acidification of the seas could bring additional difficulties to some species in finding prey, besides all the well known problems related to acidification of the oceans.



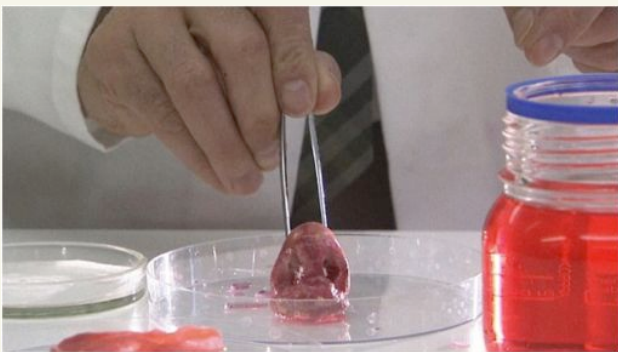


# Weird stories

## Noses and ears sprouting everywhere

The olfactory epithelium contains primitive multipotent stem cells. This has been known for many years and such stem cells have been recently used for regenerating tissues. But sometimes the result can be quite unexpected, as is the case of a young lady who received a transplant of olfactory cells in her spine to help repair some nerve damage. The treatment did not work, but it was only after 8 years that she discovered a tumor growing in her spine. The 3 cm new piece of flesh was nasal tissue secreting a mucous-like fluid, that caused her much pain.

Journal reference: *Journal of Neurosurgery: Spine*, July 8, 2014. DOI: 10.3171/2014.5.spine13992.



Different is the story of a young Chinese man who had a second nose growing on his forehead for future transplant. The first reaction to this disturbing picture is that the all story has been made-up and the picture is just a joke performed with the help of Photoshop. But this work, that hit all the news probably for the bizarre appearance of the picture, is not much more than traditional surgery.

If you still wonder why on earth the surgeons have chosen the forehead to grow this second nose with all the rest of the body available, the reasonable answer they provide is that the forehead skin and tissue are most similar to those of the nose.

The surgeons also promised this man that he will have a fully functioning new nose, although we are still a bit skeptical.

Although the picture and the news can be found on all major media, from Reuters to BBC and National Geographic, we were not able to find a proper scientific reference.



Instead, a picture of an ear growing on the forearm of a lady was published on September 13, 2014 in the *New England Journal of Medicine*.

Ref.: R.M. Collar and P.J. Byrne (2013) Prelaminated Free Flap for Auricular Reconstruction. *N. Engl. J. Med.* 369:1151.



# Food Chemistry...

**Herve' This (in the picture) has always tried to combine his two passions: chemistry and cuisine. He has a degree in Chemistry and is a well known chef. For more than 20 years he has been trying to introduce what he calls "Molecular Gastronomy".**



He uses basic ingredients, such as maltodextrins and other polysaccharides or proteins combined with vitamins and salts, with the addition of the appropriate pure chemicals to give smell and taste to such concoctions.

Such ideas are spreading with alarming speed. Software engineers at Silicon valley

The term was coined by the late Oxford physicist Nicholas Kurti in 1988 and was adopted by several chefs, including the English Heston Blumenthal, the Spanish Ferrand Adria' and American Homaro Cantu. A few years ago "Molecular Gastronomy", known also with other names, became very popular for "cooking" eggs in liquid nitrogen, making meringue in a vacuum chamber and using distilling sets and beakers in the kitchen.

have developed a magic potion called Soylent, containing 30 ingredients and intended for those who have no time to eat normally.



Heston Blumenthal



Restaurants were open where, at the modest price of a couple of hundred pounds, you could enjoy a meal with a flavour of magic.



We understand that some people have no time to eat and do not enjoy tasty food (just like some people who don't take pleasure in sex).

MacDonalds and likes are always full of customers. But combining haute cuisine with poor artificial reproductions of foods is quite alarming.

Very recently, Herve' This, who is also working at INRA, France as a consultant professor and the Scientific Director of the Foundation "Sciences & Culture Alimentaire" has tried to revive the idea of Molecular Gastronomy touching on sustainability and suggesting that his approach to create foods would bring less damage to the environment.

But, after the first excited reactions for the novelty of the approach, the public returned to traditional foods and recipes.



Sometimes we feel this "scientific approach" is like a game and reminds us of little boxes containing test-tubes, pipettes and few coloured powders that were given as gifts to children with an interest in chemistry.

# ...or food magic?

Eating and eating well is a very serious activity. Eating and reproduction are the two main driving forces for the conservation of the species, it could be dangerous to play with such issues. We have learned through generations to associate flavours with foods which provide the nutritional elements we need. Disrupting such harmony could lead to disaster. It is the same with sweeteners. We are attracted to sugar because we need quick energy. Low-calorie sweeteners are fooling our sense of taste and change the meaning of the chemical words our body uses to communicate with the environment.



What is the use of paying high price for a piece of gelatin with a drop of flavouring liquid and disguised as a steak? If you are concerned with animal welfare and want to be a vegetarian, there are a lot of tasty recipes to choose from, providing all the nutritional ingredients you need, from proteins and carbohydrates to fats, vitamins and minerals. With the addition of the forgotten flavours of our grandmother dishes: beans and mushrooms, pasta with tomato and cheese, potato and peas, vegetable pies and many others.



Food science is an important discipline, but it is not about making artificial food. Rather it is about studying the composition of foods and understanding how cooking, processing, preserving practices change the texture, the flavour and the nutritional properties of what we eat.

Cooking an egg, for instance, means denaturing and inactivating avidin, a protein with high affinity for biotin, a cofactor very important for our metabolism. Heating also denatures other proteins, making them more accessible to our proteolytic enzymes. And during cooking a whole harmony of flavours are generated, which make our food more enjoyable, while stimulating production of our gastric juices. It is enough to harden an egg in liquid nitrogen to get a hard-boiled egg?

One of the most famous recipes of Heston Blumenthal is the “Bacon and scrambled egg ice cream” served with jellied tea. Can you imagine



anything less appealing than cold bacon?

Much worse if we make foods from scratch, replacing the complexity of hundreds of components found even in simple foods, like a fruit or a piece of cheese with few arbitrary chemicals chosen on the presumption that we know everything about these complex and finely balanced products and can replace nature with poor pathetic imitations.

It is like playing a symphony hitting a set of glasses of different sizes. It could be interesting and entertaining, but is not music.

**Eating artificial food could be like having sex with a corpse... someone might like it.**

# Smell stories

**This short story by John Seaborg was first published in the columns of *The New Yorker* in August 1992 and can be found in the collection: *"The Fun of It"* edited by Lilian Ross. Enjoy your reading.**

## *The Smell*

About a month ago, a terrible new smell turned up on North Moore Street in Tribeca. It did not coexist peacefully with the other smells on the street: the coffee and cooking smells from Bubby's, a local hangout; the sweet, strong smell of olive oil stored in Hillside Imperial Foods; pepper and nutmeg smells from Atlanta, a spice warehouse; the beer smell from Walker's, the neighborhood bar; and the hay, manure, antiseptic, and horse-sweat smells coming out of the police stables on the corner of Varick. The new smell routed all those other smells. The rich olfactory texture of the street was shattered.

The smell seemed to have no center. Sometimes it left North Moore altogether and glided down to Franklin or up to Beach. It behaved more like a mist than a smell, rising at odd hours of the night, clinging to cobblestones and loading docks, creeping over roofs, and settling in the breezeways behind people's lofts. No one could say just what the smell was--only that it was certainly caused by putrefaction of some kind of flesh. Blaustein & Son, plumbers, at No. 32, thought that the smell might be rotting human flesh, and called the cops.

Blaustein: We get a lot of bad smells in this business, but I never smelled anything like that.

Son: It was like blood.

Blaustein: A very stale, musty smell, like something in an old closet.

James Herman, a painter who lives at No. 42: "I worked in a slaughterhouse as a kid, and this was worse than anything I ever smelled on the killing floor. I think there were actually two smells. One was a dank, very musty-smelling odor, and the other was this real pungent, acid odor. It was a very aggressive smell.

**John Seabrook is a staff writer at *The New Yorker* since 1993. He is the author of *Deeper: My Two-Year Odyssey in Cyberspace* (Simon & Schuster, 1997), *Nobrow: The Culture of Marketing the Marketing of Culture* (Knopf, 2000), and *Flash of Genius and Other True Stories of Invention* (St. Martin's, 2008). He has taught nonfiction writing at Princeton University and lives in New York City.**



Ernie Lee, a caterer, who lives at No. 40: "At first, I thought my dog had peed in the house, so I went out and bought a bunch of disinfectants. Then I went to see if the fire hydrant outside the building was the source of the smell. I couldn't figure out where it was coming from. It was like a phantom smell. You'd be doing something and suddenly it would just show up, like a person. You couldn't do anything once it was there--couldn't eat, couldn't sleep, couldn't do any intimate acts."

Finally, someone had the idea of asking James, North Moore's homeless person, who sleeps in the doorway of No. 37. James pointed to No. 31-33 and said, "The Chinese."

No. 31-33 is in the middle of the block and has a sign over the door that says "T. Chan Enterprises." It turned out that the owner, Mr. Charlie Chan, had been exporting food from there for about a year. Recently, he had expanded into the shark-fin business, which is a good business to be in these days. Crates full of the dorsal fins of different species of shark were being brought to 31-33, processed, and shipped to Asia for use in shark-fin soup. The classical method of processing a shark fin is to leave it out in the sun until it rots. Mr. Chan, lacking the facilities for that, was blowing hot air onto the fins in two sauna-like chambers he had installed in the basement. The exhaust was being vented from a grate on the ground floor into the air of North Moore Street.

A spell of humid August weather set in and the smell on North Moore Street became unbearable. Pedestrians avoided the street. Cabdrivers wouldn't stop there. James the homeless person left. The smell got into Bouley, and the Tribeca Grill, two of the fashionable restaurants in the area. By the middle of the month, Rachel Friedman, who lives on North Moore, had plastered the street with notices urging neighbors to call Kathryn Freed, their City Council member, and to call the New York State Department of Agriculture and Markets, in Brooklyn.

Ms. Friedman had already spent two weeks on the phone with an array of municipal authorities, trying to figure out which one was responsible for bad smells. She had discovered that government is not constituted to cope with smells--that, of all the senses, smell is the least susceptible to regulation. "You'd think that in this city there would be some kind of Smell Complaint Bureau, but there isn't," Ms. Friedman says. "The Department of Agriculture and Markets told me that if the shark fins inside the building were spoiled, it could do something.

The Department of Sanitation told me that if the shark fins were lying out on the sidewalk, it could help. The Bureau of Consumer Affairs would be interested if someone were charging too much for shark fins. The EPA wanted to know whether breathing shark fin was harmful to our health. But no one would touch smell. When I called Kathryn Freed's assistant, Stacy, and said 'bad smells,' she wasn't too interested. When I said 'rats,' that changed everything."

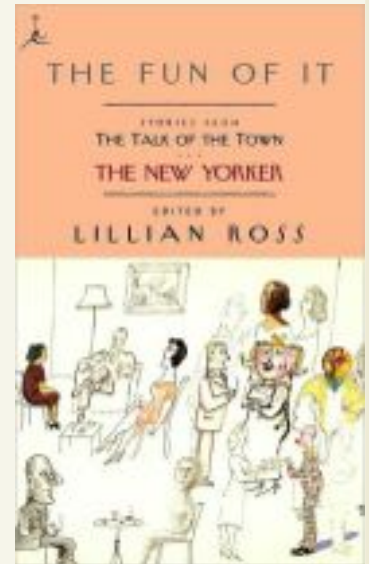
Kathryn Freed came and smelled the street. "It was like something had died. Horrible. A carrion stench," she said later. Then, a couple of weeks ago, Inspector Paul Feldman of Ag and Markets came and smelled the street, and decided to take a look at T. Chan Enterprises. (Inspector Feldman is the nearest thing this city has to an official nose.)

On the way back to his office, he found that people were fleeing the subway car he was in, he smelled so bad. Soon afterward, Feldman returned, and confiscated some of the shark fins. He asked Mr. Chan to suspend his operation, and Mr. Chan did.

Whether Mr. Chan will be cited for any violations depends on whether he ever had a license to process shark fins (apparently he didn't), and on whether the Ag and Markets lab determines that the shark fins are fit to eat. "If our inspectors seized the product, something probably isn't right with the fins," Mary Ann Waters, of Ag and Markets' public-affairs office, in Albany, said, explaining why the agency had the authority to shut Chan's shark-fin operation down. "We have reports that some of the fins may be insect infested. Maybe the Chinese like their shark fins this way, but in our view, it isn't right."

Several days after the Ag and Markets action, we dropped in on Mr. Chan Enterprises and met Daniel Chan, the son of the owner. Daniel Chan said that the company was developing a new shark-fin-processing method, and hoped to resume operations soon, on the sixth floor. He took us to the basement. The smell at the top of the stairs was bad, and it became more awful with each step down. Maybe because smell is close to the neural center of fantasy, as we descended the stairs, we had a vision of the shark fin-business from the shark's point of view--being caught, defined, and tossed overboard still alive, unable to swim, to be eaten by other sharks.

At the bottom of the stairs were two machines called ozone neutralizers, which Mr. Chan said the company had leased for two hundred dollars a month in order to improve the smell. Beyond the ozone neutralizers were the processing chambers. Mr. Chan inhaled the foul air deeply and smiled. "No smell," he said. "See? No smell."



*(reprinted with permission from the author)*



# BOOKS

## The long expected second edition of "Pheromones and Animal Behaviour"

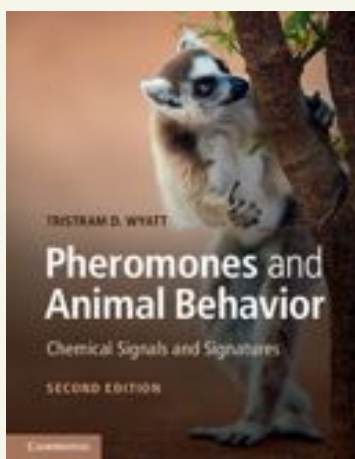
Ten years after publishing his most successful book "Pheromones and Animal Behaviour", Tristram Wyatt has come out with a second edition, completely revised, highly enriched and updated. We have experienced a fast progress in our understanding of chemical communication in the last decade and books can quickly become out of date.

This second edition, that we should more appropriately regard as a new book, fills the gap and is going to be one of the main references for the next few years.

There is no need to introduce Tristram Wyatt to ECRO members. Many of us have met him at Meetings and have had the opportunity of appreciating his most enjoyable lectures, full of information and insights.

Here are a couple of the many enthusiastic reviews written by our colleagues.

*'Tristram Wyatt's Pheromones and Animal Behavior takes us on an interdisciplinary voyage along one of the most ancient communication channels. He explores, in depth, how chemical signals and signature mixtures shape social interactions, and why. I enjoyed his writing style, which also makes the book accessible to non-specialists. This excellent second edition is heavily revised and enriched. It unravels some of the mysteries of the world of pheromones, explaining what they are, their origins, functions, evolution, and the communication purposes they serve in a large variety of animals. Wyatt takes us through a well-judged range of examples of some of the amazing chemical communication strategies, from ants right up to the scent of human attraction. The book is far-reaching, inspiring, and brilliantly illustrated.'*



*'This thoroughly modern revision of the classic first edition is an amazing journey through the landscape of pheromones. Tristram Wyatt engagingly covers a vast territory, deftly condensing thousands of important academic papers into a lively, informative, and richly illustrated book. Everything from insects to the possibility of sexy secretions from humans is covered from the points of view of neuroethology, chemistry, molecular biology, and more. The book is a must-read for any undergraduate or graduate student or working scientist interested in a singular comprehensive resource on this fascinating topic.'*

*Leslie B. Vosshall, Rockefeller University, NY*

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7. Pheromones and recruitment communication;
8. Fight-or-flight: alarm pheromones and cues;
9. Perception and response to chemical communication: from chemosensory receptors to brains, behavior & development;
10. Finding the source;
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12. Using semiochemicals;
13. On the scent of human attraction



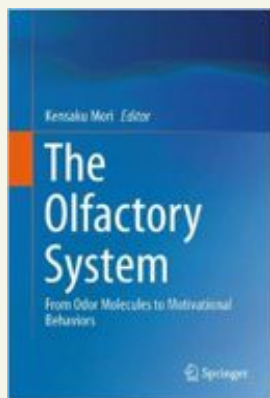
**Published: January 2014**  
**ISBN: 9780521130196**

**The book is not cheap at 45 GB pounds for the paperback edition, but it is well worth its price. And there is a good news! Anybody can claim a 20% discount. You just need to visit the website [www.cambridge.org/WYATT14](http://www.cambridge.org/WYATT14) before 31 August 2014**

Several books have been recently published in the field of chemical communication. They can be classified as "technical books" and generally are collect contributions of several authors. Here is a selection of them worth looking into.

**The Olfactory System From Odor Molecules to Motivational Behaviors**

Mori, Kensaku, Ed.  
Springer 2014  
145.59 € (Hardcover)

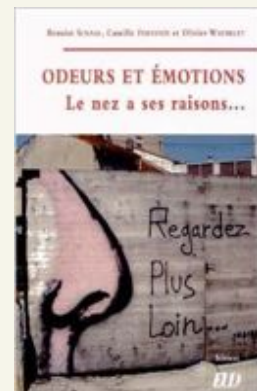


**Olfaction Warfare: Odor as Sword and Shield**

Kurtis Toppert Ed.),  
U.S. Army Res. Lab., 2014  
11.35 € (paperback)

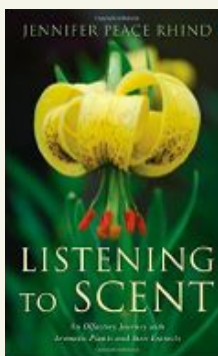
**Olfaction et émotions : Le nez a ses raisons...**

Benoist Schaal, Camille Ferdenzi, Olivier Wathélet  
Dijon Univ. Press, 2013  
25 € (paperback)



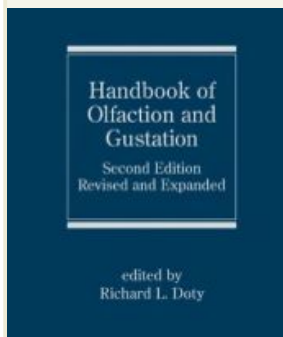
**Listening to Scent: An Olfactory Journey with Aromatic Plants and their Extracts**

Jennifer Peace Rhind, 2014, 19.50 £



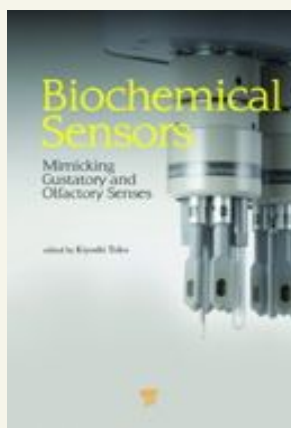
**Handbook of Olfaction and Gustation**

Richard L. Doty, Ed.  
CRC Press 2014,  
280 € (Hardcover)



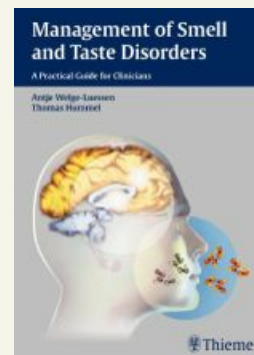
**Biochemical Sensors: Mimicking Gustatory and Olfactory Senses**

Kiyoshi Toko, Ed.  
CRC Press 2013



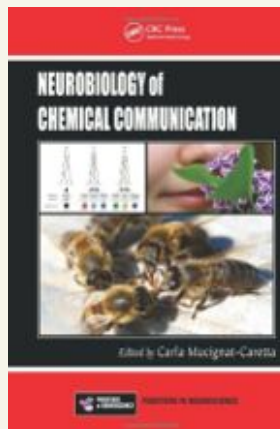
**Management of Smell and Taste Disorders**

Antje Welge-Luessen and Thomas Hummel  
Thieme, 2013  
88.09 € (Hardcover)



**Neurobiology of Chemical Communication (Frontiers in Neuroscience)**

Carla Mucignat-Caretta  
CRC Press, 2014  
115.77 € (Hardcover)



249.95 \$ (Hardcover)

**Bioelectronic Nose: Integration of Biotechnology and Nanotechnology**

Tai Hyun Park Ed.  
Springer 2014

# Students' reports

Every year ECRO offers many students and young scientists the opportunity of attending Conferences or visit other labs for short periods, providing them with grants. In this space, they report on their experiences, both scientific and human.

## *Benjamin Auffarth reports fom the Odorspace Conference, Hannover*

In September 2013 I had the chance to participate in the odorspaces conference in Hannover. Funding support by ECRO eased my financial situation considerably and made it possible for me to attend. The conference was unique in several ways. It focused on research in olfaction, particularly on a subfield about perceptual and cognitive aspects to the system, a topic on which I had then just published a review article. It was very ambitious both in scale, boasting several hundred attendees, and in level, counting with some of the best known researchers in the field, many of which presented their latest findings and results. Most of these people I hadn't been lucky enough to meet previously. Social events, talks over coffee, and posters, and special topic workgroups encouraged and strengthened the open and informal atmosphere that prevailed. I am pleased to inform that the local organization was very smooth.

I learned of many new ideas and received feedback about my thoughts including from very important PIs, which was not only great fun but also provided many insights and new perspectives for me. I got many new ideas from these discussions, and I very much hope that I will be able to dedicate myself to them. I informally talked about visiting a very good lab, and I subsequently started a collaboration with several other people that is just starting to give fruits. I was chosen to summarize the results from the discussions of our workgroup.



The conference organizers encouraged to write up the results of discussions in one or several review articles, and they asked for contributions, which I was glad to submit.

In summary, I consider the participation in Hannover to have been highly successful and enjoyable. I thank ECRO to make this possible. I will acknowledge Ecro's support on all publications that may result.

thank you

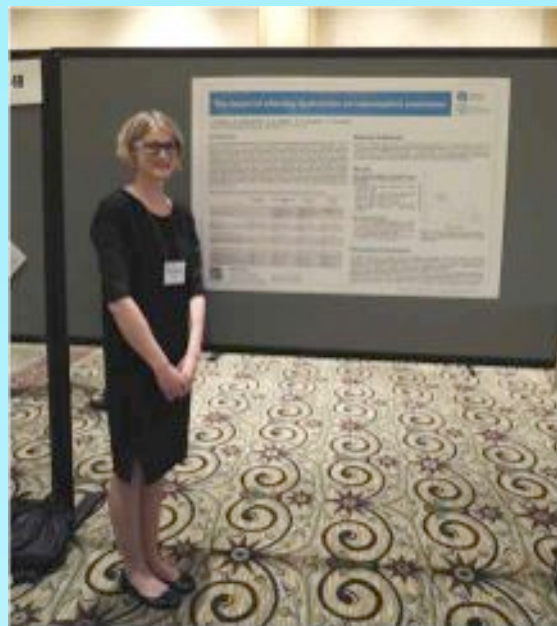
*Benjamin Auffarth  
Computational Biology Laboratory  
Institute of Molecular Biology and  
Biotechnology (IMBB)  
Heraklion, Crete, GREECE*



### *Jacqueline Krajnik, Vienna, reports from AChems*

I sincerely thank the European Chemoreception Research Organization (ECRO) for their generous travel grant, enabling me the great opportunity to participate at the XXXVI. „Annual Meeting of the Association for Chemoreception Sciences“ (AChems) held in Bonita Springs, Florida in April 2014. It was my first time attending an AChems meeting and I felt overwhelmed by the pleasant and relaxed atmosphere and enjoyed it very much.

By granting this participation I had the outstanding chance to present my work from the field of human olfaction “The impact of olfactory dysfunction on interoceptive awareness” and to meet the leading scientists in the field of chemoreception sciences. The meeting program comprised poster sessions and symposia. Especially during the 2 hour poster sessions, which I liked most, there was enough time and space to exchange and get ideas as well as feedback by established experts. However, also the symposia offered very exciting topics being beyond the scope of my own field of research. I really enjoyed for example the fascinating talk of Matthias Laska dealing with behavioral responses in large carnivores to mammalian blood odor and a blood odor component, or the symposium organized by Jay Gottfried about the role of rodent’s sleep in enhancing olfactory perception, learning and behavior.



In addition I appreciate the organization committee’s effort in organizing social events opening the chance to start the formation of a scientific network in an informal environment. Many ways were found to facilitate interactions between members like for example the Welcome Banquet on Wednesday opening the meeting, the ChEMA-social or the Student Meet-up, where students were invited to gather and meet in informal way.

It was an awesome experience to get a comprehensive overview in chemoreception sciences and to meet establishes researchers in this field, who I only knew from their publications.

*Jacqueline Krajnik,  
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# Forthcoming Meetings



The next ECRO meeting will be held in Dijon from 10-14 September 2014. It will be organized by the Luc Penicaud "Centre the Gout et de l'Alimentation (CSGA)"

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## Welcome to the 2nd DOS World Congress 2014

...The idea is to create devices which can capture odors, turn them into digital data so as to transmit them everywhere in the world ...The aim of the Second Digital Olfaction Society World Congress 2014 is to discuss:



- ❖ The advances of digital olfaction Research & Development
- ❖ The practical applications of digital olfaction
- ❖ The impact of these applications on our life and lifestyle

### Digital Olfaction Society World Congress 2014 will highlight:

- ❖ The interdisciplinary sciences related to Olfaction and Digital olfaction.
- ❖ The way in which we can transfer the concrete breakthroughs of Research & Development towards industrial applications concerned by digital olfaction.
- ❖ How to design and extend the applications of digital smell technologies to everyday life.

<http://www.digital-olfaction.com/dos-committee.html>