

ECRO Newsletter



Autumn 2013

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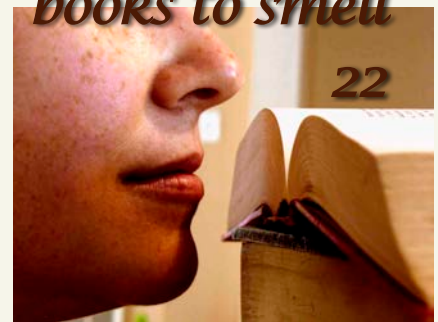


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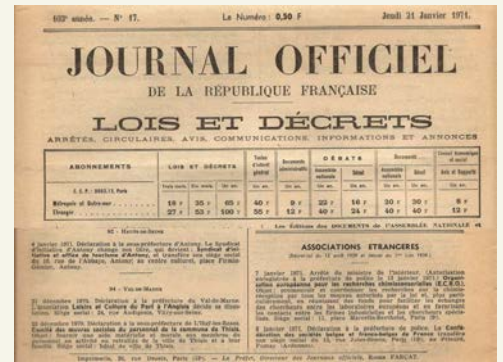
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Chemical Senses: Editor-in-chief: Prof. Wolfgang Meyerhof

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

Science is changing. Of course not science itself, but the attitude of people towards science, both scientists and lay people.

We can first observe that the world of research is getting crowded. In recent years the population of scientists has increased tremendously, also due to the massive contribution of China and to a lesser extent other emerging countries like India and Brasil. This is positive, of course, as research can benefit from the contribution of a large number of scientists, new work force and new ideas. But it also carries increasing competition and in some critical situations competition can lead to aggressivness, unethical behaviour and urge to publish, at the expense of scientific correctness and novelty.

Moreover, the adoption of metrics, such as the Impact Factor to evaluate the quality of research has produced a race of both individual scientists and scientific journals to increase their impact factor with attitudes that remind us of the stock exchange business

The techniques of Advertisements are also widely used and this is connected to a large business in which open-access journals are heavily involved.

When you receive a very kind and flattering invitation to publish in one of the “leading” open access journals, listing all the advantages that this choice might involve, the importance of making your “top-class” research widely available..., well you wonder whether there is some financial interest behind. In many cases it is just a dirty business, and the unethical behaviour of a large number of new journals has been openly denounced by a recent investigation performed on behalf of the journal Science. In other cases, the journal is respectable and accurate peer-review is assured. Nevertheless the high prices authors are asked to pay seem to be exaggerated, particularly if the journal is only published on the web, without paper, printing and shipping costs. Of course we do not question the reliability of the research published, but editors can still play on the interest and impact on science. So, if you have reliable and accurate data on the colour and size of faeces laid by a specific bird in a specific region, as compared to those relative to another region and you find that the two set of data are statistically identical... which journal can accept your work? Try “open access”.

On the other hand, it is also important that some journals do not reject your manuscript just because “it is not of wide interest” while suggesting you to submit it to “a more specialised journal”.

A more specific observation that I would like to discuss is more directly related to molecular biology and we can refer to our field, chemoreception.

We are all aware of the revolution caused by the widespread use of tools for molecular biology and how it affected biochemical research. While speeding enormously the progress of knowledge – I have specifically in mind the overwhelming amount of information provided by genomes and transcriptomes, that have recently become common and cheap activities – new technologies have reversed the way we look at nature. Traditionally and for many centuries the curiosity of the scientist was the driving force. Starting from the observation of a natural phenomenon, the curious naturalist engaged in studying the elements, the mechanisms and the molecules at the base of that specific behaviour.

In biochemistry, the search originated from a physiological observation, leading to the identification of the proteins responsible for that phenomenon and eventually of the gene encoding the protein, its regulation, mutations and genetics.

Now the path is reversed. Getting a transcriptome is a matter of two weeks and a couple of thousands euros. The information you get is huge, what about making it the object of a publication? It just needs a bit of bioinformatic experience to group the sequences into families, making nice cakes, each slice a different colour and comparing the results with those of another species.

Starting from this base, then we can painfully and slowly build the hard work, taking a sequence or a group of sequences, studying the proteins and only in the end trying to understand the physiological function.

It is a reverse process, but quite valuable and legitimate. Problems arise when we want to deduce and guess too much, squeeze information that are not present in the original data. Just to give an example, quantitative PCR is widely used to compare the expression of genes in different tissues, ages or physiological conditions. If such data are not corroborated by direct evaluation of the encoded proteins, their value remain limited, incomplete and inconclusive.

Another phenomenon is the use of multivariate analysis to extract new information from available sets of data. Such informatic tools are very powerful and useful, provided the original data are accurate, reliable and rich in information. The information can be present in a hidden, concealed way and in such cases computer programmes can help in extracting and making visible features and relationships difficult to perceive in the original form.

A last personal note. As I had announced, I am officially retired from the University of Pisa. However, I shall be pleased to continue my service as the editor of this Newsletter as long as I shall be involved in research. Starting February 2014 I shall be working at the Department of Plant Protection of the Chinese Academy of Agricultural Sciences in Beijing, as Visiting Professor.

Of course, anyone interested, colleagues and students, is welcome to visit me in Beijing

I wish you Happy Christmas, a productive New Year and, for our Chinese friends, Happy Spring Festival!

From the President

Dear ECRO members,

What a wonderful meeting we enjoyed at the end of August in Leuven! Special thanks to Peter Mombaerts, who organized a great blend of outstanding scientific and social events.

The first event occurred in the afternoon of August 16th: before the opening reception of ECRO 2013 in the City Hall, Peter co-organized the TEDxLeuven Salon "The Senses", mainly focused on the sense of smell. This scientific event was held in an amazing place: a 17th century chapel converted into a modern auditorium in the Irish College. Videos of each talk are freely available at <http://tedxleuven.com/speakers>

ECRO 2013 was organized by Peter in the very old Katholieke Universiteit Leuven, founded in 1425. Sixty speakers presented and discussed very interesting results about all aspects of smell and taste both in invertebrate and in vertebrate systems. Talks were held in the Promotiezaal, an impressive august room. About one hundred posters were on display and could be discussed during the entire meeting in an adjacent room, where Belgian beer was freely available all time. At coffee breaks we could get excellent espresso coffee or cappuccino and a great selection of all types of Belgian chocolate.

At one social event we learnt that the so-called French fries originated in Belgium, and should be named Belgian fries. That evening we ate Belgian fries (>90 Kg potatoes!) and mayo, while tasting seven Belgian specialty beers. The last social event was a walking gala dinner in the lawn of Museum M, prepared by the local chef Wim Janssens. Finally, Peter made a short movie featuring some representative moments of this meeting. This wonderful memento can be downloaded at <http://www.ecro2013.org>. Thanks, Peter!

Next ECRO meeting will be held in Dijon, France, 7-11 September 2014, and will be organized by Luc Pénicaud and collaborators from the Centre des Sciences du Goût et de l'Alimentation. The website for ECRO 2014 will be available soon, but the Call for Symposia is already open. Please send Symposium proposals to Luc Pénicaud. We are looking forward to another great combination of exciting science and local French flavors.

During ECRO 2014, we will have the ECRO Assembly and the presentation of the new board. The call for nomination of candidates for the board will run from April 10 to June 10, 2014 and the elections will be held through the ECRO website from July 10 to August 10, 2014. Please nominate candidates for the new board!

A warm thank to Paolo Pelosi for preparing the ECRO Newsletters, and to all members of the ECRO board for the effort we share in pursuing the goals of ECRO.

I wish you a Happy New Year and hope to see you at ECRO 2014 in Dijon and.....do not forget to renew your ECRO membership!

Anna Menini

Treasurer's report

For the year January-December 2013, ECRO reported almost 200 paid up members and during the year ECRO was able to grants to a record 25 students and young scientists amounting to 13000 Euro. We depend on 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 if ECRO membership numbers are low, our income is also low. Our total assets at the end of November 2013 was 62,122 euro, together with another 18,817 Euro in our conference account that will be used to support future conferences. This year we received 7948 Euro from the Polak foundation that was all disbursed in grants to students and young scientists. Unfortunately, this year we did not receive any donations from industrial sources, and this needs to be addressed in the coming year.

On the congress side, behind the scenes, the ECRO board together with Peter Mombaerts and his team worked very hard to prepare the ECRO Congress 2013 in Leuven, 26-30 August 2013, and by all accounts this was a very good congress both scientifically and socially. We thank Peter and Marlene especially for their efforts. Membership payments are now open for the year 2014 via our web site www.ecro-online.com.

We are now in the process of preparing for the ECRO2014 congress in Dijon, so please make sure that you register as a member of ECRO.

GRANTS AWARDED since Spring 2013

ECRO 2013 Congress

Mari Aoki, Muhammad Tehseen, Michele Dibattista, Anat Kahan, Diana Loch, Annika Cichy, Maurya Devendra Kumar, Charlotte D'Hulst, Christiane Wegner, Nanette Schneider, Enrique Morillas, Quentin Dietschi, Kathryn Pietsch, Mikail Lebourhis, Melanie Johanneau, Abu Farhan, Klinov Artem Borisovich

ESITO 2013

Angela Rouyar

ODOUR SPACE MEETING

Benjamin Auffarth, Fernando Locatelli

Wishing you all a happy and successful 2014!

Krishna Persaud

(Executive Secretary and Treasurer, ECRO)



NEWS IN BRIEF

Prehistorical chefs. Now we have evidence that 6000 years ago people already liked to flavour their foods with spices. Scraping the inside of pots from that age in Denmark scientists found residues of local plants with peppery and mustard-like flavours.

"In Europe we see spices coming in as imports a few thousand years ago, but what we've found is that



Europeans were putting spice in food long before that," says Craig.

In fact, the pots predate the arrival of agriculture in the region, says Craig: the chefs at work in Germany and Denmark were hunter-gatherers. "Quite often we associate the arrival of farming with the first use of new plants and spices," he says. "But people were putting spice in foods before then. It's probably always been part of our cuisine."

Saul H, Madella M, Fischer A, Glykou A, Hartz S, et al. (2013) Phytoliths in Pottery Reveal the Use of Spice in European Prehistoric Cuisine. PLoS ONE 8(8): e70583. doi:10.1371/journal.pone.0070583

Win panic with scented dreams. Two papers seem to suggest that you can erase memories during sleep and odours can do the trick. We are well aware that sleep helps to process and consolidate memories, but so far no evidence was produced that the opposite could be obtained. This is particularly interesting when you want to overcome a fear.



In the first paper (*A Rolls, M Makam, D Kroeger, D Colas, L de Lecea and H Craig Heller Sleep to forget: interference of fear memories during sleep. Molecular Psychiatry 18, 1166-1170, November 2013 | doi:10.1038/mp.2013.121*) the Authors used a fear-conditioning paradigm in mice to condition footshock to an odor. If the conditioned stimulus was presented again during sleep twenty-four hours later it produced a stronger fear response when tested during subsequent wake. However, if the re-exposure of the CS odor during sleep was preceded by microinjections of a protein synthesis inhibitor into the basolateral amygdala, the subsequent fear response was attenuated.

The other study used human subjects (*Hauer KK, Howard JD, Zelano C, Gottfried JA. Stimulus-specific enhancement of fear extinction during slow-wave sleep. Nat Neurosci. 2013 Nov 16(11): 1553-5. doi: 10.1038/nn.3527. Epub 2013 Sep 22*). The volunteers were conditioned in an fMRI scanner and exposed to a series of neutral smells, such as lemon or mint. Each smell was paired with a photo of a face, and some of the pairings were also accompanied by a small electric shock. The fear produced in the subjects was measured by sweat production and MRI scans of their amygdala. In a second phase, the subjects slept and during their sleep were exposed to some of the odours used to condition them. Finally, after waking up, they were presented the same faces that had been associated with the odour and the shock. In brief, what the

Authors found is that the faces associated with the odour presented in the second phase during sleep produced a lower fear reaction.

It is interesting to appreciate how odours can affect our subconscious even when presented during sleep, while it is alarming to realize their power of conditioning our behaviour, as we can see in the following story.

Menthol make cigarettes more addictive. Menthol flavoured cigarettes are the new target. It seems that menthol is not just a flavouring agent added to some cigarettes to improve their (objectionable) flavour, but can have drug-like effects. Menthol cigarettes are very popular in the USA with about 30-40% of smokers preferring them. In 2011, a report from the FDA's Tobacco Products Scientific Advisory Committee concluded that *"there is strong evidence indicating that adolescent menthol cigarette smokers are more dependent on nicotine than adolescent non-menthol cigarette smokers"*.

The FDA said it was "likely" that menthol cigarettes posed a greater health risk than normal cigarettes, because they encourage young people to take up smoking, make it more difficult to quit and increase addiction. The agency is considering banning the use of menthol in cigarettes.



The FDA plans to support new research on the differences between menthol and nonmenthol cigarettes, including:

- menthol's likely impact on smoking cessation;
- menthol's likely impact on attempts to quit; and
- the levels of menthol in cigarette brands and subbrands.

The agency is also funding three menthol-related studies:

- a study to look at genetic differences in taste perceptions in tobacco use, which may further the understanding of why certain racial/ethnic populations are more likely to use menthol cigarettes [Genetic Factors in Taste Perception and Tobacco Usage];
- a study to examine the effects of menthol in cigarettes by assessing human exposure to smoke-related toxins and carcinogens by comparing cigarettes that are the same except for the levels of menthol in them [Real-Time Measurement and Uptake of Carcinogens by Menthol Cigarette Smokers]; and
- a study to examine the effects of menthol and nonmenthol compounds in various tobacco products on both tobacco addiction and toxicants of tobacco smoke [Counter-Irritation by Menthol: Molecular Targets and Role in Airway Disease].

Police use 'nose telescope' to detect cannabis.

Several cities across the USA have legalised the use of cannabis. As a consequence, attention goes to the pungent smell originating from the joints. Denver has passed a new "odour ordinance" with a potential \$2,000 (£1,247) fine for anyone found



guilty of polluting the atmosphere.

Under the new law an offence is committed if the odour is detectable when the smoke is mixed with seven times the volume of clean air. Among the devices used by the police to monitor the environment, there is this funny-looking "nose telescope"... does it really work?

California city complains about the odour of chili

The city of Irwindale has asked a judge to prevent Huy Fong Foods from making a spicy sauce until the factory takes measures to reduce the smell.

The culprit is a world-famous sauce called Srirachia, there is even a festival around this product.

But recently residents have complained of burning eyes, irritated throats and headaches and are unable to escape the smell even inside their homes.

The odours are so strong and offensive as to have caused residents to move outdoor activities indoors and even to vacate their residences temporarily to seek relief from the



odours.



Tom Getchell

a great scientist and a dear friend

Tom Getchell was a pioneer in olfaction, before the era of receptors, genomes, fMRI and transgenic mice. He started probing the olfactory mucosa with electrodes and was one of the first to recognise the importance of “perireceptor events” a very fortunate term which he coined and remained attached to his name.

Krishna Persaud was his close friend and collaborator and here he gives an account of his great personality.

Many of us in chemical senses community will have known Thomas Getchell (*in the photo below with his wife Marilyn*). He was a familiar face at meetings of AChems and ECRO, where he presented many fundamental



findings in Neuroscience, that have since formed much of our current understanding of olfaction. He passed away peacefully in his sleep, Saturday, July 20, 2013. Tom was a professor in the

Department of Physiology at the University of Kentucky College of Medicine. He received his B.S. degree from Gannon College, his M.S. degree from Villanova University, and his Ph.D. from Northwestern University. During his career he had faculty positions at University of Pennsylvania, Yale University, Wayne State University, and UK, and he trained many graduate and post-doctoral students and received numerous awards for his research in neuroscience.

He also served as Assistant Dean of the Graduate School at Wayne State University and Associate Dean for Research and Basic Science at the UK College of Medicine.

I got to know him well during the 1980's when I spent a few years in the USA at the Medical College of Virginia in Dr. John DeSimone's laboratory, where we had a collaboration with Tom, investigating ion transduction mechanisms in the olfactory epithelium.

At that time he was a Dean at Wayne State University, but he would always be eager to spend time in the laboratory, sometimes flying to Virginia for the weekend to be with us while we tried a new experimental technique. I remember many intense discussions, his courteous manners, his enthusiasm and his profound intellect. He will be sadly missed and our hearts go out to Marilyn his wife, and his two sons, Aaron and Abraham.

The photo below was taken in 1998 at the ECRO Congress dinner in Siena, Italy. It shows from left to right, Thomas Getchell, Krishna Persaud, John DeSimone, Andrea Cavaggioni.

Krishna Persaud



An interesting opinion?



Ferrando S and Gallus L (2013) Is the olfactory system of cartilaginous fishes a vomeronasal system? *Front. Neuroanat.* 7:37. doi: 10.3389/fnana.2013.00037

Sara Ferrando and Lorenzo Gallus of the University of Genova, Italy, have recently published an interesting “opinion article” on the likely hypothesis that sharks and other cartilaginous fishes use a vomeronasal system to smell odours. The idea of course is questionable as such, but the arguments brought forward by the Authors seem quite convincing and the hypothesis very fascinating.

The best is to let Sara and Lorenzo present their work with a summary they have prepared for the ECRO Newsletter.

Usually the olfactory system is believed to be present in all the vertebrate groups, from cyclostomes to mammals. A careful reading of the literature and some new data obtained in the recent last years, lead to hypothesize that a whole class of vertebrates, the cartilaginous fishes (sharks, skates and chimaeras), could not rely on the olfactory system to smell. The “accessory olfactory system”, named vomeronasal, could be the main olfactory organ for these fascinating fishes.

The genome of the elephant shark presents only one sequence belonging to the family of the Olfactory Receptors (ORs). The olfactory epithelium of different investigated species does not show ciliated receptor neurons nor the presence of the G protein olfactory-type (considered as an olfactory-system marker). On the other hand, Vomeronasal Receptor genes, microvillous receptor neurons and vomeronasal system-related G-proteins are commonly found in the investigated cartilaginous fishes.

The function of the vomeronasal system in vertebrates and its relationship with the main olfactory system have been widely discussed.

The different tuning of these two systems adds a very intriguing perspective on the possibility of sharks smelling only by means of the vomeronasal system. The ORs bind different ligands with different affinities, consistently with the combinatorial nature of olfactory sensitivity; the vomeronasal receptors are similar to other G protein-coupled receptors, showing a strong affinity for a particular ligand. Thus, a predator relying only on the Vomeronasal receptors could maybe smell and follow an interesting odor with a less “environmental noise”.

The main olfactory system is present in Cyclostomes and it is probably ancient in the vertebrate lineage. The vomeronasal system, and especially the family of receptor V2Rs (the more represented in Cartilaginous fishes) is not present in the living Cyclostomes. Did the appearance of V2Rs as chemosensory receptors occur at the same time of Cartilaginous split from the tree of vertebrates? Has the shark taken an advantage in predatory activity by using the vomeronasal receptors? Why did the shark (possibly) lose or reduce the main olfactory system? A lot of questions. A starting point: Understanding if cartilaginous fishes have a (hidden-to-date) main olfactory system.



it's a smelly world

The places where we live are gradually losing their typical odours and become aseptic and similar across the world. Either they are aseptic and odourless or, worse, they are scented with the same artificial blends, as those filling anonymous shopping centres from London to Paris and from New York to Beijing.



Japan Airlines decided to fill their departure lounges in Japan with fragrances that change during the day. Early in the day and you will be engulfed by what JAL describes as a “gentle and refreshing fragrance in the peaceful morning”, derived from Japanese cypress, hinoki leaf, pine needles and some other bits and bobs. Later on the smell changes to “luxury fragrance with sophisticated richness”, thanks to yuzu (a citrus fruit), more hinoki leaf, rosewood, lavender and more.



As we become increasingly aware of this phenomenon, we wish to recapture the original olfactory notes that older people associate to familiar situations of their lives, while for young people represent interesting discoveries.

The International Congress for the History of Science, Technology, and Medicine, held in Manchester, 22-28 July 2013, included a “smell-walk” through the canals and back alleys of the city. Pleasant odours, as well as disgusting stench were experienced by the adventurous walkers, who smelled roasted coffee from captivating pastry shops, but also those typical odours of back streets, urine, cigarette smoke, waste, exhaust fumes and baby vomit, as reported enthusiastically by one of the participants.

Several smell-walking tours are being organised in different cities. You can find information on these and other olfactory events at:

<http://smellandthecity.wordpress.com>



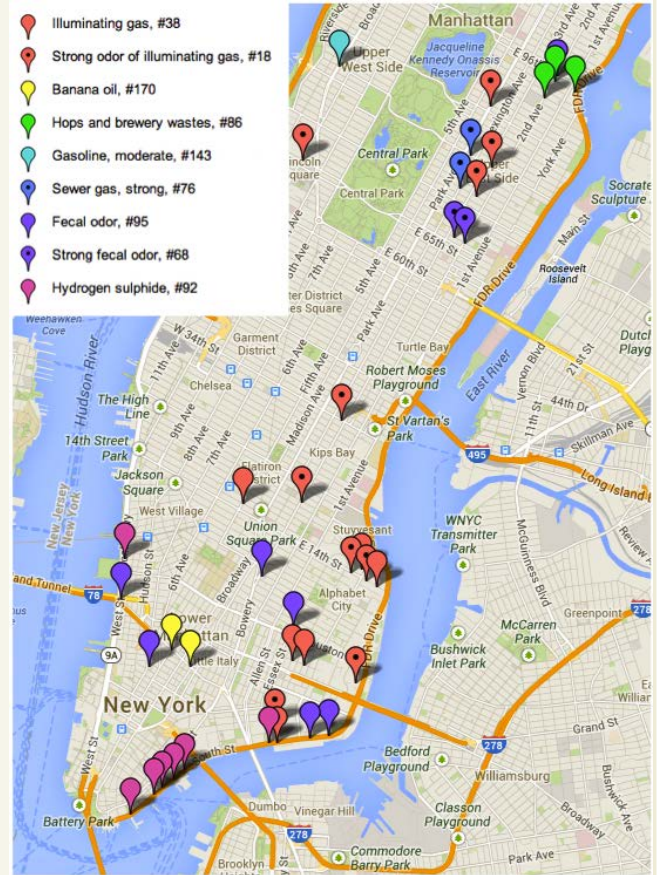
In a pub of Cardiff, a very unique event entitled 'Smell the City: An Olfactory Exploration of City Sewer Fat' was organised in October.

Various samples of

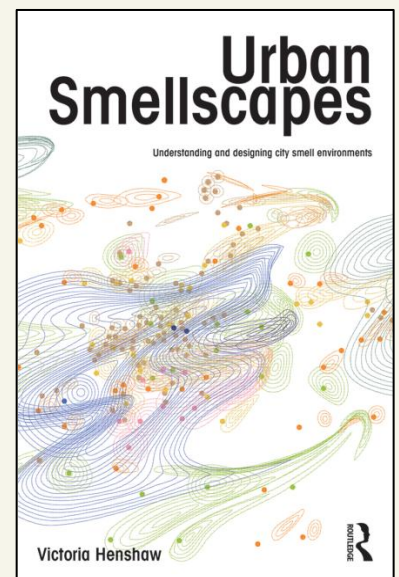
"fatbergs" from different sewers of London and Cardiff were exhibited to be smelled by visitors. The collection was organised by Victoria J.E. Jones, a PhD candidate at Cardiff Metropolitan University (enjoying the smell of one of her samples in the bottom picture), who found that fatbergs (huge lumps of fats building up in sewers, see picture) from different areas have different smells.



To complete the picture of smelly cities, this is a map of New York where smells found in the sewers in 1910 are reported. You can imagine what sort of odours...banana oil, breweries, fecal stench and similar.



Finally, it is worth citing a book a related book "Urban Smellscapes: Understanding and designing city smell environments" by Victoria Henshaw, just published by Routledge.



Smelly ghosts

Did you think ghosts revealed their presence with clattering, screeching, rusty doors opening, chain dragging... well, also. But they have more subtle and gentle ways for introducing themselves, pleasant odours. Yes, not stench of rotting corpses, putrefied blood or stale vomit. Vanilla, roses and cakes... according to real witnesses. So, be aware when you smell these odours and nobody is around, especially in the dark!



There are many “serious” reports of such olfactory encounters and people have posted their experiences on the web. Here are some examples for your amusement, if you want more, go to:

<http://www.dreamwatch.com/Archive Paranormal Stories/ghost-stories/sounds-smells.html>

Spirit Smell. I began to smell a sort of fragrant smell I was driving into Sheffield UK yesterday (28/10/2013) with two dogs in the back of my car. I began to smell a sort of fragrant smell ... I thought one of the dogs been sick... the dogs ... were fine. I took the dogs home and their owner gave me a Thank You present, wrapped... it was a Smelly gift set. I turned a few minutes later and had a smell. Guess what? The smell was back. — Julie in U.K.

Julie, your experience is similar to many on this page, especially those about ghostly smells in cars. It may not be "a common occurrence" but neither, I believe, is it UNcommon, and not at all crazy. Thanks for sharing. — Kat

Persistent smell of flowers in the night
 Last night I was woken by the scent of flowers in my room. At first I thought I was dreaming, but as I took a deeper breath I realized I was awake... This happened again but this time the scent was... from a another type of flower. I went back to sleep. The third time the scent woke me, ... a earthy scent, not exactly pleasant. The final time I was awoken, the scent of flowers had returned. — Susan in Panama

Welcome Susan, you are our first visitor from Panama. In my opinion, someone in the spirit world was trying to get your attention. — Kat

I woke up at 3:05 a.m. smelling men's cologne
 ... My husband woke up around 1:00 a.m. sleep walking talking about a wire being loose, then I woke up at 3:05 a.m. smelling men's cologne—a kind of old-school musky scent. My husband was in bed. I walked to the bathroom and there was no smell. I walked back to the bed and no smell on his side either. I got to my side and the smell was REALLY strong. The strangest thing is, I started thinking about my grandfather who passed about a year and a half ago... What does this mean? — Apryl in Texas

Thanks for your story, Apryl. In my opinion, your grandfather stopped by to check on his loved ones. — Kat

Perhaps different smells convey specific messages from the other world. It looks like the dead have found a more direct and cheaper way to communicate with their relatives, sending home mediums and fortune tellers. Still, there could be a possibility for a young scientist with a background in olfaction and in search of a job.

Five easy recipes to boost Impact Factor



“Impact Factor” is the magic word. The quality of a scientific journal is measured by its impact factor, just like the level of a television programme is strictly related to its audience rating. The obvious consequence is that in both cases to reach a high level you should “please” the public, offer pleasant and entertaining stories rather than good culture. We all know this and experience everyday how this attitude contributes to degradation of published scientific literature, television programmes and most of products and services we use in our life, from food to clothes, transport...

It is therefore understandable that scientific journal, each one to a different extent, all aim at raising their impact factor and proudly advertise on their sites the small increase (if this is the case) in this magic value attained during the last year.

Now, we would like to give you five easy recipes to increase such an important parameter. Some of these approaches are already adopted and we cannot guarantee that all are respectful of good ethics. But, after all, ethics is not so important, as we cannot convert ethical behaviour into currency... quite the opposite!

First approach. This is the most “ethical” or least non ethical and is adopted to different extent by several journal. It consists in publishing a certain number of reviews every year. Reviews, we know, are highly cited with respect to regular papers, and most important are promptly cited. It is normal and fully acceptable that a journal includes a certain (small) number of reviews among its papers... but where is the dividing line between a physiological and a pathological behaviour? There are no rules establishing how many reviews can a journal publish before generating suspicious thoughts. Perhaps, reviews should not be included in the computation of impact factor, or else two different values should be given for regular papers and for reviews.

Second approach. You can improve the impact factor by selecting papers on most popular subjects. It is becoming more and more common practice to have your manuscripts evaluated by the editor, who decides whether your work is suitable for external reviewing or not. “The editor and a collaborator have carefully read your manuscript and decided that it is not interesting to a wide audience. Please be assured that this decision has nothing to do with the quality of your work and we suggest you submit your manuscript to a more specialised journal”. A special gift to the scientist who can send us the largest number of letters similar to that he/she has received. Sometimes the last comment clearly betrays the fact that the editor has not read the manuscript, but only the title and perhaps has gone as far as the abstract before quickly evaluating how many citations could the manuscript get during the two years following publications. This habit of rejecting manuscripts before an accurate evaluation is obviously done “...in the interest of the Authors..., so that you can send it to another journal saving precious time”.

Third approach. An easy trick is to select papers on the number of authors and scientific institutions listed as affiliations. It is obvious that more research groups means more citations in the following years. Certainly each group will publish a couple of papers in the near future and will not fail to cite its own recent work. A manuscript authored by five groups, for instance, will guaranty very likely an impact factor higher than 5. This is not quite ethical, is it? But has the advantage of stimulating collaborations... we can always find a positive aspect even in a corrupt behaviour.

Fourth approach. This is more openly dishonest. The editor or one of the reviewers (opportunely instructed by the editor) asks you to cite a certain number of important papers that you have overlooked and that (only by a fortuitous chance) happen to having been published in the same journal where you submitted your manuscript. Easy, fast and painless! you are happy to see your manuscript published and the editor is happy in securing a certain number of citations.

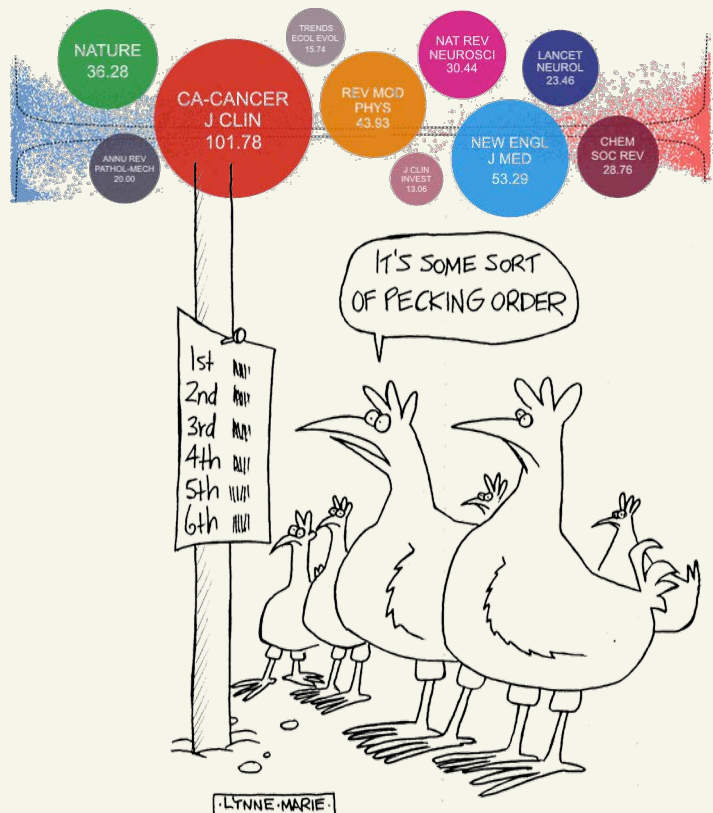
Fifth approach. This is quite different and more complicated. I am not sure if it should be classified as science fiction. In fact, to the best of my knowledge, it has not yet been adopted... or was it? perhaps in such clever and concealed way that we could not notice. In case someone wants to follow my immoral and nepharious advice, I would claim my copyrights, unless I will not be included in the criminal project.

I shall try and explain how it works by giving you a detailed protocol:

1. Contact a certain number of felonious friends, let's say 100, who share your ideas and are ready to collaborate
2. Establish a new scientific journal, chosing a topic that can generate a large number of papers without too many risks. For example, it could be "The international journal of insect transcriptomes"

3. Each partner of this fraternity solemnly promises to write at least one paper every year to be published in the journal. To stick to the example provided, this is feasible, as transcriptomes now are easy to produce and relatively inexpensive. Say that each partner choses a different species of insect and publishes a first report on the transcriptome data during the first year

4. The following year, each partner selects another subset of data from the transcriptome and publishes a second paper without further expenses. Among the reference list, he will include at least 10 citations taken from the papers published during the previous year in the same journal. This is easy, just cite all the transcriptomes related to insects similar to your own: for instance, if you have studied one species of locusts, cite all papers dealing with transcriptomes of locusts. If the same step is repeated the following year... here we are! your journal already reached an impact factor of 10... not to count all the other citations coming from other journals!



Ig Nobel Prizes

The 2013 Ig Nobel Prize winners were announced and awarded on Thursday night, September 12, 2013, at the Ig Nobel Ceremony.

This year none of the prizes was awarded to research on odour or chemoreception. Is it a good or a bad sign? More and more in recent years these prizes recognised pieces of research that looked like laughing matter at the beginning, but in fact represented significant advances in science. The best example is Andre Geim who got the Ig Nobel in 2000 for levitating a frog on a magnet, and then was awarded a real Nobel Prize in 2010 for his well known work on graphene. But several results that were considered suitable for the Ig Nobel were published in top journals, like Science and Nature.

This year prizes were awarded to research published in *Plos One*, *Current Biology* and *Nature*... it is not all laughing matter! But at least one research can help us stop crying, as you can discover if you keep reading...

Here is a list of the 2013 prizes, judge yourself whether the related works deserve humour or respect... or both.

The **MEDICINE PRIZE** was assigned to a team of Japanese and Chinese scientists for assessing the effect of listening to opera, on mice who received heart transplant.



Dacke and her colleagues, who won the Prize for Biology and Astronomy, dressed in safari hats and wielding giant dung-balls, educate the audience on the importance of crap-science.

REFERENCE: "Auditory stimulation of opera music induced prolongation of murine cardiac allograft survival and maintained generation of regulatory CD4+CD25+ cells," Masateru Uchiyama, Xiangyuan Jin, Qi Zhang, Toshihito Hirai, Atsushi Amano, Hisashi Bashuda and Masanori Niimi, *Journal of Cardiothoracic Surgery*, vol. 7, no. 26, epub. March 23, 2012.

The **PSYCHOLOGY PRIZE** rewarded a research showing that people who think they are drunk also think they are attractive.

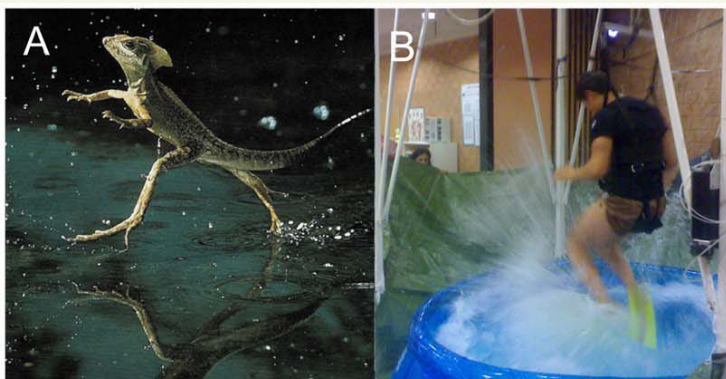
REFERENCE: "Beauty is in the Eye of the Beer Holder': People Who Think They Are Drunk Also Think They Are Attractive" Laurent Bègue, Brad J. Bushman, Oulmann Zerhouni, Baptiste Subra, Medhi Ourabah, *British Journal of Psychology*, epub May 15, 2012.



The **SAFETY ENGINEERING PRIZE** was assigned to the late Gustavo Pizzo [USA], for inventing an electro-mechanical system to trap airplane hijackers — the system drops a hijacker through trap doors, seals him into a package, then drops the encapsulated hijacker through the airplane's specially-installed bomb bay doors, whence he parachutes to earth, where police, having been alerted by radio, await his arrival. US Patent #3811643, Gustavo A. Pizzo, "anti hijacking system for aircraft", May 21, 1972.

The **PHYSICS PRIZE** went to a theoretical study showing that on the moon we would be capable of running across the surface of a pond, just like some insects and lizards can do here on the Earth.

REFERENCE: "Humans Running in Place on Water at Simulated Reduced Gravity,"



Alberto E. Minetti, Yuri P. Ivanenko, Germana Cappellini, Nadia Dominici, Francesco Lacquaniti, PLoS ONE, vol. 7, no. 7, 2012, e37300.

ARCHAEOLOGY PRIZE: Brian Crandall [USA] and Peter Stahl [CANADA, USA], for parboiling a dead shrew, and then swallowing the shrew without chewing, and then carefully examining everything excreted during subsequent days — all so they could see which bones would dissolve inside the human digestive system, and which bones would not.

We prefer not to illustrate this news with suitable pictures

REFERENCE: "Human Digestive Effects on a Micromammalian Skeleton," Peter W. Stahl and Brian D. Crandall, Journal of Archaeological Science, vol. 22, November 1995, pp. 789–97.

The **CHEMISTRY PRIZE** recognised the discovery that the biochemical process by which onions make people cry is even more complicated than scientists previously realized.

This is the only prize among those awarded this year, that may be somewhat connected with olfaction. In fact, before this work was published, the lacrymatory factor of onions was believed to be directly linked to the volatile compounds, that characterise its flavour. The novelty of this work lies in the discovery that the compound irritating our eyes has nothing to do with odours: therefore, the relative enzyme can be turned down (in genetically modified onions) without losing their appealing flavour.

REFERENCE: "Plant Biochemistry: An Onion Enzyme that Makes the Eyes Water," S. Imai, N. Tsuge, M. Tomotake, Y. Nagatome, H. Sawada, T. Nagata and H. Kumagai, Nature, vol. 419, no. 6908, October 2002, p. 685.

PEACE PRIZE to Alexander Lukashenko, president of Belarus, for making it illegal to applaud in public, AND to the Belarus State Police, for arresting a one-armed man for applauding. This is a rather incredible, but true story:

Konstantin Kaplin, said he was convicted of "applauding in public" despite fairly conclusive evidence of innocence: he's only got one arm. "The judge read out the charges [and] the police affirmed that I was applauding," said the one-armed man. "The judge looked ashamed of herself," he said, but she imposed the fine anyway.



A paper published in Current Biology fetched the **PRIZE IN BIOLOGY AND ASTRONOMY** for discovering that when dung beetles get lost, they can navigate their way home by looking at the Milky Way.



REFERENCE: "Dung Beetles Use the Milky Way for Orientation," Marie Dacke, Emily Baird, Marcus Byrne, Clarke H. Scholtz, Eric J. Warrant, Current Biology, epub January 24, 2013.

The **PROBABILITY PRIZE** (for *Improbable Research*, as the organizers of the IgNobel call the works awarded) was assigned for two related discoveries: First, that the longer a cow has been lying down, the more likely that cow will soon stand up; and Second, that once a cow stands up, you cannot easily predict how soon that cow will lie



down again.

REFERENCE: "Are Cows More Likely to Lie Down the Longer They Stand?" Bert J. Tolkamp, Marie J. Haskell, Fritha M. Langford, David J. Roberts, Colin A. Morgan, Applied Animal Behaviour Science, vol. 124, nos. 1-2, 2010, pp. 1–10.

PUBLIC HEALTH PRIZE: Kasian Bhanganada, Tu Chayavatana, Chumporn Pongnumkul, Anunt Tonmukayakul, Piyasakol Sakolsatayadorn, Krit Komaratal, and Henry Wilde, for the medical techniques described in their report "Surgical Management of an Epidemic of Penile Amputations in Siam" — techniques which they recommend, except in cases where the amputated penis had been partially eaten by a duck.



REFERENCE: "Surgical Management of an Epidemic of Penile Amputations in Siam," by Kasian Bhanganada, Tu Chayavatana, Chumporn Pongnumkul, Anunt Tonmukayakul, Piyasakol Sakolsatayadorn, Krit Komaratal, and Henry Wilde, American Journal of Surgery, 1983, no. 146, pp. 376-382.

See more at:

<http://www.improbable.com/ig/winners/#ig2013>

Guessing odours



Can we predict odour from molecular structure? This is a very old and controversial question, periodically proposed... each time without a definite answer.

It was probably Lucretius Carus who was the first to suggest that odour is related to the shape of small particles entering our nose and producing pleasant sensation or repulsive smell, according to whether they are smooth and round or rough and spiky (read more on “Lucretius, the Biochemistry of Olfaction, and Scientific Discovery” by Erling Holtmark, at https://www.academia.edu/321004/Lucretius_the_Biochemistry_of_Olfaction_and_Scientific_Discovery).

John Amoore was the pioneer who first studied odour character within an experimental frame and laid the basis for all the biochemical work on olfaction that developed during the last 30 years. He related molecular shapes to different odours and used this classification to tentatively identify what he called “primary odours”.

Although there are still scientist who are trying to sell an alternative story, that odour is related to vibrational frequencies of molecules, it is well and widely established and accepted by the international scientific community that stereochemical parameters are primarily responsible for the different and more or less specific olfactory sensations.

The main point is: to what extent can we rely on shape, size, functional groups to predict the odour of a molecule? How detailed and reliable can we expect such prediction to be? Of course these questions call other more basic questions: what is the degree of confidence (or experimental error, if you prefer) when we measure (1) shape of a molecule and (2) odour quality. It is all down to these two types of measurements, which provide the raw data to be compared and put in relationship.

The literature of the second half of last century is full of papers describing how molecules with desired odours were designed on the basis of already established odour-structure relationships. After synthesising and smelling the compounds, in many cases predictions were confirmed, and this approach allowed the production of molecules with a specific odour and other required characteristics, such as ease of synthesis, low toxicity, environmental compatibility,

What we do not know is how many attempts have failed and how many products have been discarded, because they did not meet the expectations.

The fact is that in some cases and to a certain extent we can predict the odour of a new compound from its molecular structure, but with severe limitations:

- 1) this has been done successfully only within groups of odorants closely related in structure (typical examples are the musk odorants); even in such cases, however, the results have matched the prediction only in a very crude way;
- 2) even in the best cases the main character of an odour can be perceived in a new chemical, but accompanying notes are most likely different and can affect the overall sensation;
- 3) the majority of odorants generate complex patterns of response from our varied array of chemosensory neurons, therefore it is almost impossible to produce a single compound able to stimulate several different receptors with the required relative intensities.

A few years ago Charles Sell published a key paper where he warns us against a too simplistic view of the relationships between odour and molecular parameters. He chose a provocative, but at the same time realistic title for his paper: “On the unpredictability of odor”.

However, such warnings and difficulties did not discourage other scientists, who faced the task and the challenge to predict the odour of molecules based on chemical structures. In the past, this type of work had been approached by chemists, who, by definition, understand the structure and the behaviour of molecules. Unfortunately, chemists are not always good at statistics, are too practical to understand computer programmes and all sorts of data processing and manipulation.

No problem! there are experts around who can work miracles! Starting from gross olfactory descriptions and overlooking chemical parameters can produce accurate descriptions of odour quality and can even predict the pleasantness of molecules that wait to be synthesised.

One of the most recent of a series of papers using such approach has been published this year on Plos One: Castro JB, Ramanathan A, Chennubhotla CS (2013) Categorical Dimensions of Human Odor Descriptor Space Revealed by Non-Negative MatrixFactorization. PLoS ONE 8(9): e73289.

A set of 144 odorants with their odour descriptions (Dravnieks A (1985) Atlas of Odor Character Profiles. Philadelphia: ASTM Data Series ed. ASTM Committee E-18 on Sensory Evaluation of Materials and Products. Section E-18.04.12 on Odor Profiling) forms the basis for a very complex mathematical processing, comparison, reshuffling, and all sort of manipulation, producing very beautiful and colourful graphs well worthy of a modern art exhibition.

The meaning of all that is quite hard to understand for a simple chemist with a poor knowledge of statistics. But, fortunately, the Authors explain the conclusions they have reached: all these odours can be grouped in 10 categories, yes only 10, just a bit more than the 7 primary odours proposed by John Amoore in his first version of the stereochemical theory, which however soon became 30-40 based on the number of reported specific anosmias. Probably the message of the Authors was not meant to be as simple as it sounds. But that is how the media interpreted the message:

LA Times

It might seem that the range of scents humans can detect is infinite, but scientists have managed to sort them all into 10 basic categories, ranging from peppermint to pungent.

NBC

For years, humans have had categories for colors, flavors and sounds, but when it comes to the sense of smell, things are a mess. Now, just as there are three primary colors and five basic tastes, researchers propose that odors can fall into 10 basic groups.

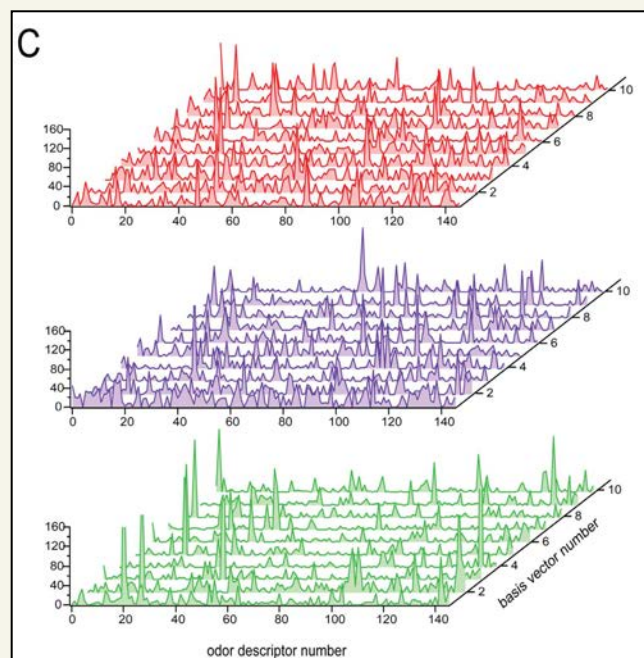
In the new scheme, woody smells like pine or fresh cut grass fall into one group. There are the sweet scents, like caramel, chocolate, vanilla. Florals and perfumes are one category, citrus fruits get another, and the rest of the fruit world is lumped into a third.

Less pleasant odors like sour milk, gasoline and rotten meat have their own fetid designations. Rounding out the list are minty smells — which include eucalyptus and camphor — and the smells of toasted, nutty snacks like popcorn, peanut butter and almonds.

This is only a starting point, as the Authors caution, and a proof of the method. But... here is the real problem: a proof of what? that we can get insights into chemistry and physiology by applying computer programmes? Or that we can get accurate conclusions from poor gross information?

How accurate were the odour descriptions used by the Authors in this study? By definition, odour descriptions are affected by large degrees of uncertainty due to language, culture, individual physiological differences, mood, attention and many other factors we are not even aware of.

For example, we are all aware that odour quality



changes with concentration. The phenomenon is part of our common experience and is also easy to explain: each odorant compound stimulates a number of different receptors, each to a different extent. One or two will produce strong signals and represent the main characters of the odour, the others will contribute with accessory notes. It is understandable that such weak contributions will gradually disappear at low concentrations, thus changing the overall perceived sensation.

This is the physiological effect, but there is also a psychological contribution: we associate a specific experience to an olfactory image, that includes odour quality as well as intensity. The same odour can be pleasant or repulsive, according to the concentration, like the typical strong and pungent odour of stink bugs, that we also find at much lower concentrations in cucumbers.

Another problem is the choice of descriptors. Among those used by the Authors we find classic terms as woody, fruity, banana and earthy, together with non olfactory and ambiguous words, such as sickening, pungent, cooling or sweet.

Is it really possible to make accurate predictions on the basis of vague, ambiguous and highly variable information?

Another paper where complicated mathematical algorithms are applied to raw data of odour description to derive rules for predicting the odour of chemicals has been recently published in Plos Computational Biology (Snitz K, Yablonka A, Weiss T, Frumin I, Khan RM, et al. (2013) Predicting Odor Perceptual Similarity from Odor Structure. PLoS Comput Biol 9(9): e1003184).

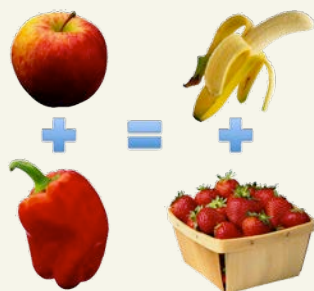
Here the Authors provide evidence that odours of mixtures can be predicted better by considering mixtures as single entities rather than analysing the contributions of their single components.

This concept is easy to accept and not surprising. We know that our brain stores olfactory memories as unique experiences rather than as sets of individual perception events.

What is hard to understand is how a mathematical model fed with properties of the odorants giving the best results (not real molecular parameters recognised to be relevant for the odour) and odour quality evaluations can predict the perception of a mixture. After getting lost among technical terms and complicated computing programmes, we lose contact with molecules and odours, ending up with graphs filled with dots and dubious correlation lines.

What we hoped to find in the end was one or two practical examples of real predictions... something like: when we mix benzaldehyde, isobutyric acid and geraniol we get a certain kind of odour, identified by a number of descriptors. Which other set of chemicals can we mix to get a similar odour?

Probably this sounds too trivial, but this is what we understand with "prediction". We have computer programmes to predict the sites of potential phosphorylation on a protein or to predict the folding of a polypeptide chain based on known three-dimensional structures. In music we can predict the pleasantness of a particular chord or a sequence of notes, based on accurate measurements of frequencies and on the knowledge of how particular frequencies affect our perception system.



We can also predict, to some extent, how the weather will evolve in the next 24 hours, based on a large number of measurements, satellite monitoring and past experience.

Our sense of smell is still elusive. We all agree that we cannot predict the success of a dish, even if cooked according to the recipe of a famous chef. When we compare odours we are very demanding. One of the most popular topics when we talk about memories and odours is the strong evocative power of smells. This only works when our olfactory sensation (always a complex mixture) matches very closely the olfactory image we have stored in the memory.

What we get from the paper is the conclusion that a programme is better than another at "predicting" odour similarities. How better? How accurate are the predictions? What do we get in practical terms?

Our conclusion is that we still know too little about our sense of smell. Of the nearly 350 olfactory receptor genes we have in our nose, only a handful have been orphaned. In other words, if our olfaction works on 300-350 basic sensations (what John Amoore called "primary odours"), so far we have identified the chemical structures corresponding to a small fraction of them. But, are we sure on the number of olfactory receptor expressed at the protein level? And then we really get lost when olfactory messages reach the cortex and other regions of the brain, where complex processing occurs, of what we are just starting to become aware.

Few decades ago we used to compare perceived odour with molecular structure and tried to extract some correlations enabling us to design new odorants.

After the acquisition of molecular biology and all the wealth of chemical information now available, we decided that chemistry is not so important after all. Rather than investigating which molecular parameters are most relevant for the odour, we prefer to ask a computer programme to do the job and take for granted whatever comes from the calculations.

Is this real science? Yes, in a broad sense, but we don't think it is natural science, a science which investigates nature.

It seems that psychophysics and statistics send us back to the 60s, wiping out 50 years of molecular biology.

Together with Luca Turin's ideas, we experience a revival of olfaction's "alchemy".

Books to smell

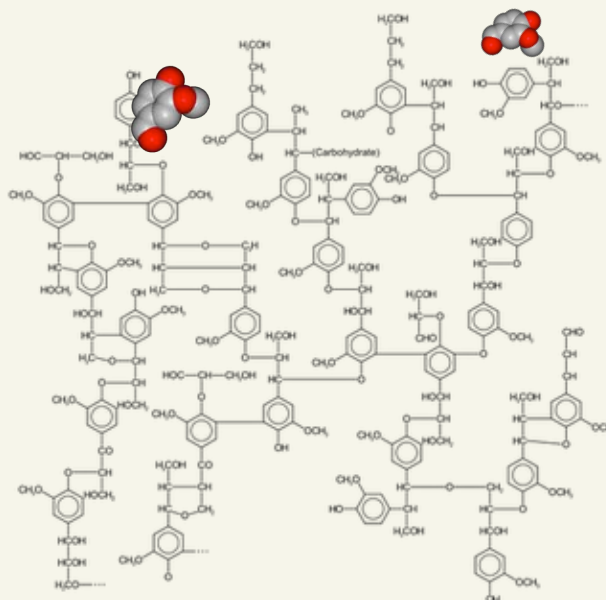
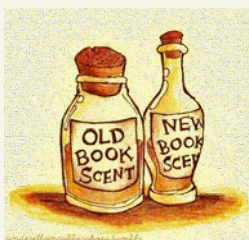


Following our discussion on e-books and their lack of smell (see ECRO NL84), it appears that the topic is still quite hot .

More and more products become available for spraying e-book readers and get back the lost dimension.

At the same time, a number of scratch and sniff books are being published. And, browsing the web, we find comments and individual experiences on the smell of books. It looks like there are quite a few people around who don't resign to loose paper books with everything attached, absorbed or included between the pages.

It seems like what most people miss in e-books is ...smell! The phenolic smell of ink in a new book or the cocktail of aromatic compounds, such as the pleasant scent of vanillin, coming from degradation of lignin in old books.



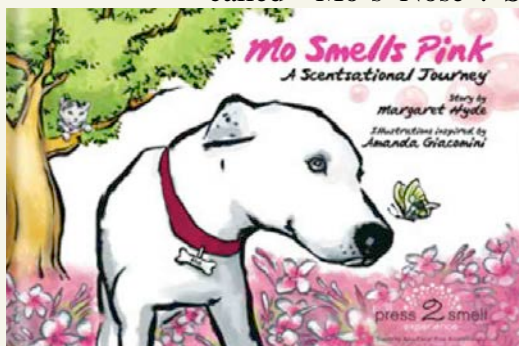
Therefore, we could expect that soon or later products to spray on e-books to give them back the lost scent would have appeared on the market. We previously reported on a special perfume unmistakably named "Paper Passion".

Now there is a complete series of different scents you

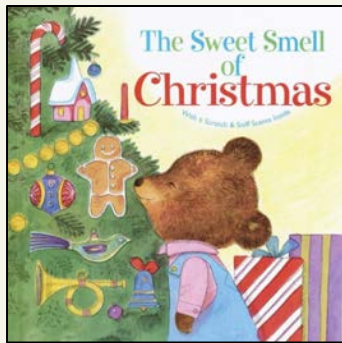
can choose from whether you wish to add an "old book" or a "new book" character to your reader, or else a whole range of olfactory notes. They also include fried bacon, if you want to read your book at breakfast, "Scent of Sensibility" for a perfect tea-time atmosphere, or cat smell (we suspect it could be cat urine) if you miss your pet. They are all guaranteed to be faithful reproductions of the natural scents, but we remain very skeptical.

At the same time, scratch and sniff books are becoming more and more popular. Most of them are for children, but there are also "serious" ones, most dealing with food flavours.

There are whole collection of children stories that you can read and smell. One has a dog (no wonder!) as its main character and is called "Mo's Nose". So, we can read and sniff "*Mo Smells Red, Mo Smells Green and Mo Smells Blue*", as well as *Mo Smells Christmas* and *Mo Smells the Holidays*.



Still remaining in the area of books for children, and quite appropriate for this time of the year, another book provides us with the odours of Christmas.



And then you can also get scratch and sniff stickers that help you to associate odours with images and names. A very large collection is available, of which you can see here few examples. If you are interested, you

can get more information at: <http://sniffstickers.amyllynegraphics.com/>

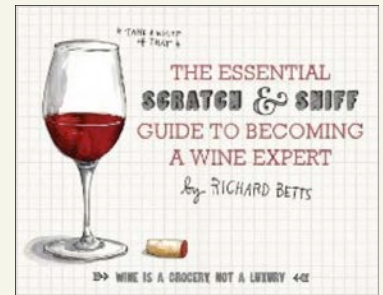


Still for the joy and excitement of children, the publisher DK Preschool produced four “Scratch & Sniff” few years ago. They are addressed to children from 2 years old and, according to the reports, are really loved by their little customers. Each book is made of 12 hard pages that you can scratch many times, each containing a particular familiar odour.



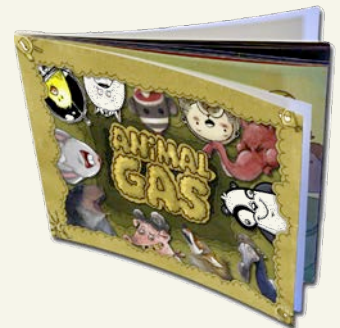
Besides these fun books for children, more serious ones are available mainly on food flavours.

Richard Betts is a sommeliers who wrote a book to helps readers through scratching and sniffing to get familiar with the basic components of wine odour. With 16 notes to smell certainly you cannot become a connoisseur, but it is still an interesting first step to introduce some real experiences



between the pages of a book, providing direct references to the terms commonly used when describing the bouquet of a wine.

And then we can end with a very funny book, one of the last published among the smelly ones, unmistakably named “Animal Gas”... yes, you guessed right, THAT sort of gas. In the words of its author, Brian Ballinger: “I’ve always loved SCRATCH AND SNIFF, and Animal Gas is the PERFECT subject matter for this. Each character in Animal Gas has his or her own disSTINK personality



and they try and convince each other that their toots smell great. There are lots of delightful smells in the book along with some really funny bad smells.”



And, if you spend enough money on this and other similar books, you receive a very special ring tone for your telephone.

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.

This year most grants helped students to attend the XXII ECRO Congress in Leuven, Belgium

Annika Cichy from RWTH-Aachen University

I would like to thank the European Chemoreception Research Organization (ECRO) for the generous support by the ECRO 2013 travel grant, which gave me the opportunity to attend the 22nd ECRO meeting in Leuven, Belgium. It was the first ECRO meeting for me. In my current research project, I examine the role of hyperpolarization-activated cyclic-nucleotide gated (HCN) ion channels in mediating proton-dependent signaling in the mouse vomeronasal organ (VNO). The 2013 ECRO meeting was an important experience for several reasons. During the whole meeting and especially during the poster session, I had the opportunity to present and discuss my own research within the national and international neuroscience community. This discussion gave me interesting ideas and new viewpoints for my project. I really liked the warm and friendly atmosphere, which made it easier for a PhD student to speak with leading experts in the field.

Furthermore, I was impressed by the numerous great symposia, which covered several important topics of chemoreception reaching from the periphery to cortical centers, from insects to human and from physiology to molecular aspects. For me, the double session focusing on the VNO and pheromonal processing was specifically interesting. It was very exciting to hear about recent data, most of them unpublished.

In addition, I really liked the several social events including the tasting of different Belgium specialties. On the one hand, it gave the attendees the possibility to learn about local traditions. Furthermore, officially organized social events facilitate the interaction for new people in the field like PhD students.

Again, I would like to thank ECRO for giving me the opportunity to attend this great and unforgettable meeting.



Lea Gagnon from the University of Montreal

Thank you for choosing my candidacy for the travel grant to attend the ECRO meeting last August in Leuven. The quality of the scientific content was high and I enjoyed discussing fresh data with my peers as well as to attend the famous TEDx talks. At least three new studies presented at the conference were directly relevant with my current work. Unfortunately, the congress was centered mainly on molecular and animal research and I did not have that many opportunities to find any post-doc position in a clinical laboratory focused on human chemosensation. However, I met people from all around the world and had interesting discussions with several of them, which will highly contribute to enhance the quality of the 2 papers I am currently writing.

The venue in Leuven was also impressive. I enjoyed very much the high quality of foods and drinks that the organising committee took great care of. It was my first trip in Belgium and I will definitely plan to visit again.

Thank you very much for your support.

Nanette Schneider from Centre du Goût, Dijon

I would like to thank the ECRO for giving me the opportunity to present the results of my postdoctoral project on neural activation induced by elemental or configural perception of an odour mixture in the newborn rabbit on the meeting in Leuven.

I have not been able to attend an ECRO meeting since my first meeting in 2006 in Granada during my PhD. This was the first time that I was able to present my work to other researchers in olfaction and I kept great memories from this meeting. Therefore I was very happy when I got the possibility to attend this year's meeting. Since my PhD I have been extending my research into all areas of chemical perception from pheromones and the vomeronasal system during my PhD, to taste receptors during my first postdoctoral position, to odour mixture perception during my second and current postdoctoral position. With this much broader background knowledge compared to my first meeting this year's meeting promised to be even more interesting.

The very broad spectrum of presentations in the field of olfaction and taste gave the opportunity to get a great inside into the newest results in these research fields. The first session on the olfactory bulb and piriform cortex and their plasticity during learning and memory formation changed my perception on the fos activation pattern I find in the olfactory bulbs of my rabbit pups. I had e.g. so far not heard about an intrabulbar map and there was some for me new information on the projections from the olfactory bulb to the olfactory cortex. Furthermore it was very exciting to hear that the mouse urinary protein Darcin is not only a pheromone but is also able to induced social learning similar to the mammary pheromone which I use in my current study to condition the rabbit pups to a former irrelevant odorant. I also enjoyed the long session on the vomeronasal system as I worked in this field during my PhD and it was exciting to see the progress that has been made since. The evening venues including the poster presentation gave great opportunity to get in contact with other researchers. It was though a little unfortunate that the brake between the last presentation and the poster session was not a little longer as this meant that a lot of people were not present during the first hour of the poster session due to having dinner. However, during the discussion of my results with researchers from different fields of specialization (e.g. piriform cortex plasticity, pheromone induced learning, receptor binding), I gained new perspectives which will be of great use when I will write them up for publication.

Furthermore I was able to make contacts which may possibly lead to future employment.

Finally I have only once been shortly to Brussels but never visited any other part of Belgium and this was also a great opportunity to get to know the picturesque city of Leuven and some of the culinary specialities of the country. I will for sure always remember this meeting not last because of the Belgium beer, fries and chocolate to taste. The city of Leuven gave a great background for this diversified meeting and the social events, the size of the city permitting easy access by foot to the conference venue.

I am therefore very grateful for the opportunity you gave me and hope to be able to make it to one of the next meetings.

Diana Loch from the University of Hohenheim

Due to the generous support of an ECRO travel grant, I had the opportunity to attend the ECRO Congress in Leuven, Belgium in the end of August 2013. It was the first ECRO meeting that I visited and I found it a great way to get and exchange ideas in our common field of research.

The meeting was a great opportunity for me to get into contact with leading scientists of my field of research (mouse olfaction) and not only listen to their presentations, but also talk to them personally. These contacts and discussions may become very fruitful for future collaborations. The meeting also allowed me to get new insights into related fields like insect olfaction and taste detection and information processing, thus broadening my knowledge of chemoreception in general.

The most valuable experience for me was the possibility to talk to other scientists, in particular PhD students and exchange ideas and solve problems. From their discussions I got some valuable ideas for my future work. These discussions were extremely useful scientifically, and moreover gave me the opportunity to improve my English.

Last but not least I enjoyed very much the social events; the social aspects have been carefully taken into consideration by the organization committee, who has found many ways to facilitate interactions between the members.

Altogether it was a wonderful meeting. I would like to sincerely thank the ECRO organization committee for giving me the chance to join the ECRO community and for its support to students in attending such invaluable experiences. I am looking foreword to visit other ECRO congresses in the future.

Christiane Wegner from Luebeck University

The ECRO meeting 2013 in Leuven was the first scientific conference in my life and thus I will treasure the exciting experience very well. I am at a very early stage of my PhD and I was very appreciated for the ECRO travel grant which enabled me to attend the meeting and to benefit from the presentations and knowledge of the outstanding scientists from all around the world and the discussions with them. It was also my first time in Belgium and it was a pleasure to see Leuven and the historical buildings, especially the wonderful university hall where the conference took place.

Since my Master's thesis I am working on the analysis of uptake images of the rat olfactory bulb and the presentation of my results during the poster session was a great experience for me. I was also very excited to meet the people whose names I have read in publications many a time and to listen to their lectures. Starting with the talk of Nobel prize winner L. Buck and continuing with talks from K. Mori and P. Lledo, the first morning already impressed me very much. Nevertheless, the most impressive lecture for me was the presentation of E. Yaksi about neural circuits in the zebrafish brain. He talked about microcircuits which can be organized into functional clusters and had a very creative way to explain the effect of clustering. He compared clustering with different voices of a choir singing a song for several voices. At the first moment it sounds all mixed up but there are many people singing the same melody, i.e. being in the same cluster. He even sang some short melodies to point his example out. I had never seen before such a incredible and inspiring explanation for clustering.

On the same evening the poster presentation took place. The mathematical method I applied in my Master's thesis can be also used for clustering, thus I was thrilled when E. Yaksi came to my poster and we talked about my results, the method used and its differences compared to classical clustering methods. This discussion really was my personal highlight of the ECRO meeting.

Although I am a mathematician, not a biologist or chemist, quite a lot of the lectures were well explained and I could learn very much from them about the biological and genetic background of the olfactory sense and the olfactory system in other species aside from rats. I came back home with a much better understanding of the bigger picture around my research, lots of new ideas to work on and lots of new scientific contacts for common projects.

I would like to thank ECRO very much not only for the financial support, but especially for the exciting and inspiring meeting in that beautiful town.

Enrique Morillas from the University of Granada

I would like to thank ECRO for the generous travel grant which gave me the opportunity to attend the 2013 ECRO meeting in Leuven, Belgium. Leuven is a wonderful city full of impressive buildings; I really enjoyed walking through the Grote Markt on route to the University Hall each morning and stop a couple of minutes to stare at the extraordinary City Hall.

Attending the 2013 ECRO meeting offered me an excellent chance to learn about recent research in various fields of taste and olfaction. I am still amazed by the top-level quality of the speakers during this meeting. The amount of topics covered by both the seminars and poster presentations was impressive.



Being learning and memory my main area of work, I found particularly interesting the talk of Ronald Davis about the analysis of olfactory memory traces in *Drosophila* using aversive or appetitive unconditioned stimuli and conditioning; Yun Zhang's and Joy Alcedo's presentations about the roles of insulin-like signaling in *C. elegans* physiology, behaviour and learning; and Jane Hurst's talk about the influence of Darcin (pheromone in male mouse urine) on mice social learning, among others.

I also enjoyed Prof. Roper presentation who explained in a very clear way, how during gustatory stimulation, taste bud cells secrete synaptic, autocrine, and paracrine transmitters including ATP, acetylcholine, GABA, norepinephrine, and serotonin.

He discussed these transmitters, which cells release them, the postsynaptic targets for the transmitters, and how cell-cell communication shapes taste bud signaling via these transmitters.

I was given the opportunity to present part of my Ph.D. work during the poster session. I'm studying the implication of the gustatory thalamus in taste recognition memory using rats. This is not a frequent topic in ECRO meetings, but I was pleased to realize that there was interest on my poster.

I had the pleasure of discussing my results with some researchers that gave me some new ideas and future directions about my work.

The only thing I would like to criticize here is that, even though the poster session lasted about three hours, I couldn't enjoy it as much as I would have liked, because there was only one session and it was late in the evening, after an intense day of work.

In addition, I enjoyed not only the scientific experience, but also the pleasant social program. Even though the schedule of the meeting was very tight, we had some nice breaks where we could drink a delicious coffee or taste different types of Belgium beer. We also had the opportunity of tasting authentic "Belgian fries", and, on the last day, we had a really nice dinner in the M Museum where you could take some food, try different types of beer, eat some tasty chocolates, and, at the end of the evening, have a delicious ice-cream meanwhile you have a nice conversation about your work with other researchers.

These three days gave me the opportunity to learn and share contacts with a lot of researchers from Europe and US and I am sure that this would be very helpful to improve my research and to increase my research group networks.

Finally, I would like to thank and congratulate the ECRO board and the local committee for organizing such a successful event, during the rest of my Ph.D. I hope to have further occasions to join other ECRO conferences.



One grant supported attending the ESITO XIII in Sardinia

Angela Rouyar from INRA-UPMC, Versailles

From the 22nd to the 28th of September 2013, the 13th European Symposium Insect, for Taste and Olfaction (ESITO) took place in Villasimius, Sardinia.

This year, the symposium was organized by Marcus Knaden, Silke Sachse and Bill Hansson, coming from the Max Planck Institute for Chemical Ecology, department of evolutionary neuroethology in Jena, Germany.

During this week, 9 topics were discussed in the form of talks and posters. These topics were: application and chemical ecology, development and evolution of chemosensation, evolution and chemosensation, modulation and plasticity, gustation, insect microbes, neural circuits, robotic and modeling, and a strong accent on receptor function topic.

During the symposium, I had the opportunity to present a poster on my research named "A background of plant volatile compounds modifies sex pheromone responses in the pheromone-specific olfactory pathway in a male moth".

Two talks and one poster particularly pleased me.

The first talk was presented by a PhD student, Elisa Badeke, coming from the laboratory of Silke Sachse at the Max Planck Institute for Chemical Ecology in Jena. Her topic was very similar to mine and it is for this reason her talk captured my attention. Her talk was named "Reception and coding of pheromone signals in *Heliothis virescens*". Her studies show how the odor environment can influence the pheromone detection, coding and flight behavior in male moth *H. virescens*. Using vitro and vivo calcium imaging, she has discovered that certain plant-related odorants reduce pheromone-evoked activity in the antennal lobe. investigate whether these plant-related odorants also influence pheromone-guided flight behavior or not. In order to do so, she will be testing *H. virescens* in a wind tunnel under various test parameters.

The second talk was presented by PhD Marianna Zhukovskaya, coming from Sechenov institute of evolutionary physiology and biochemistry in Saint-Petersburg, Russia. She presented a talk named "grooming as a non specific mechanism of odorant-elimination". I think it is an original study. She has done behavioral experiments to study the frequency and patterns of grooming behavior of cockroaches.

Exposure to the general odorants, hexanol and eucalyptol, significantly increased the frequency and time spent on antennal grooming. The changes in grooming sequences are often considered a form of displacement behavior, But, as some authors suggest, these may also serve to increase the sensitivity of olfactory system in novel environments

I also appreciated a poster named "Identification of molecule targeting insect odorant receptor" and presented by Maïke Hink working in Bayer CropScience AG, research pest control in Monheim, Germany. My attention was focus on this poster because it presented an applied research work in development of insect control strategies. The main objective of this study is to identify specific agonists and antagonists of the olfactory receptor co-receptor Orco by screening on a cell line expressing the receptor combination OR2/Orco of the malaria vector mosquito *Anopheles gambiae*. Various hit classes with a good in vitro activity have been identified. Behavioral effects have been observed and confirmed in laboratory assays for representatives from several hit classes with *D. melanogaster* and *A. aegypti*. For certain authors, these compound identification could represent a way to insect control solution for application in public health.

This event was a great opportunity to show my work to other scientists sharing the same interest and to discuss furthermore about the results of my experiments. This allowed me to gain new study and work perspectives. But most of all, I had very constructive dialogues with different researchers and many positive feedbacks. Additionally, I was able to make contact with different laboratories and I am hoping this could lead to future collaborations.

Two grants were used to attend the Smell and Taste 05 Course in Dresden

Jasmien Roosenboom from Katholieke Univ., Leuven

I was attending the Smell and Taste 05 course in Dresden, organized by Professor Thomas Hummel. Following this course was an excellent opportunity for me to critically think about my own research. The course was combining traditional lectures with more interactive demonstrations.

The first day, the focus was set on the functioning of the olfactory system and applications in clinical research. Especially interesting from a research point of view was the lecture of Professor Haehner, considering olfactory dysfunction as an early symptom and indicator for Parkinson Disease. The other lectures had a more clinical focus, which was also interesting for researchers, in order to give study patients a clinical correct answer on their questions.

The second day, several different topics were discussed. The lectures about taste perception were of particular interest for me, since we are not having this research focus in our study today. Listening to these lectures has given me some ideas to implement taste perception in our research. Further, there was a lecture and demonstration about the anatomy of the olfactory system. It was very detailed in order to provide us a correct overview of the olfactory system, necessary knowledge to interpret certain imaging techniques that are used for research purposes, such as MRI imaging of the olfactory tract. In the afternoon, several demonstrations were given, wherefore the group was divided in small groups, leading to a very interactive setting. There was time enough for questions and comments regarding the techniques that were demonstrated. These demonstrations proved that they are really conducting hands-on research and they manage to have a good implementation of their studies in the clinic.

The third and last day offered lectures about a broad spectrum of topics. But in every lecture, they tried to find the essential connection between the scientific work and the clinical work. For example, there was a lecture about imaging of the olfactory tract, which is applicable in both scientific and clinical work. But there was also a focus on psychological and quality of life consequences of olfactory loss, which is worth evaluating, even in a research setting.

To resume, the whole course was a positive experience. It was pleasant to talk to the top researchers in the small field of smell and taste research. Because of the limited group attending this course, the focus was set on interactivity and discussion. It was possible to go in depth to every topic and have discussions with the whole group.

The course has given me a complete and realistic overview of the small world of smell and taste research.

I would like to thank the ECRO board for the travel grant, which offered me the possibility to study the challenges in olfactory research.

Kathrin Kollndorfer, Medical Univ., Vienna

I would like to thank ECRO for their generous travel grant that made it possible for me to attend the summer school on human olfaction 2013, held in Dresden (Germany), from July 28th to August 2nd 2013. I was delighted to get the privileged chance to participate in this summer school, as only a small number of applicants (~30) was accepted. I am in the third year of my PhD in the research field of human olfaction and thus it was an outstanding opportunity to get in touch with established researchers in this and related field.

The summer school was opened on Monday morning with a short presentation of every participant and the introduction of all lecturers. It was quite impressive to see the various research fields of the participants, ranging from taste identification in mice to fear communication via chemosignals in humans. In addition to the mostly theoretical lectures, practical sessions were organized in order to get to know different test procedures for assessing olfactory and taste performance. In the Taste and Smell Clinic in Dresden, we saw a wide range of psychophysiological measures explained by experienced researchers in this field. My personal highlight was the practical session on nasal endoscopy held by Dr. Gudziol, showing us detailed pictures from inside the nose.

Although we had a tight schedule of scientific lectures, Prof. Hummel enabled the organization of various social events, such as the guided city tour through the historical city center of Dresden or the boat trip in the Saxonian Switzerland, which is famous for its very impressive sandstone mountains.

Last, I want to thank Prof. Hummel and this team for the organization of this great event. He gave us the opportunity to start the formation of a scientific network in an informal environment. It was an awesome experience to get a comprehensive overview on human and animal olfaction and meet established researchers in this field, who I only knew from their publications before.

Forthcoming Meetings



The next ECRO meeting will be held in Dijon from 7-11 September 2014. It will be organized by the Luc Penicaud "Centre the Gout et de l'Alimentation (CSGA)"

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.