



AChemS
Association for Chemoreception Sciences

ANNUAL

Newsletter

2009

FOSTERING CHEMICAL SENSES RESEARCH AND UNDERSTANDING SMELL AND TASTE IN HEALTH AND DISEASE

PRESIDENT'S REPORT

Peter Brunjes, PhD, *AChemS President*



The year's biggest news, of course, is that AChemS successfully hosted the International Symposium on Olfaction and Taste (ISOT) last summer. We all owe a big thanks to Tom Finger who did an incredible job coordinating the meeting, and to Diego Restrepo, now Past President of AChemS, for his hard work as well. Running a meeting like AChemS is difficult and takes a lot of effort from many people, but the scale of ISOT makes the job even harder:

23% more people registered for ISOT than the average for the past five AChemS meetings (888 vs. 720). An interesting question is whether ISOT is actually more "international" than a regular AChemS meeting, and the answer depends on how you look at the data. About 20% of the participants in the last two AChemS meetings were from outside of the United States, but at the ISOT meeting this number increased to 32%. Interestingly, only three more countries were represented at ISOT. In descending order by the number of registrants they were Japan, Germany, France, Switzerland, Britain, Canada, Italy, Norway, Australia, Israel, The Netherlands, Sweden, Spain, China, Korea, New Zealand, Portugal, Russia, Brussels, Brazil, Denmark, Chile, India and Slovenia. According to the 225 people who completed the on-line evaluation, last summer's meeting was a big success. Over 90% felt that the quality of both the oral and poster presentations was good to excellent. Similar results were observed for the 26 symposia and workshops, with "Olfaction in Birds," "Sniffing Underwater" and "Bitter Tastes" receiving the highest ratings. Thanks to all who had a hand in putting together this large effort.

Our organization has gone through considerable changes over the years and is about to embark on a major new one with the planned move to St. Petersburg. As a result, I have spent some time thinking about the changes I have seen during my time. I went back to look at the first meeting I

attended, the 5th annual meeting in 1983 (Thanks to Scott Herness, programs from all of the previous meetings are available on the AChemS website, see <http://www.achems.org/i4a/pages/index.cfm?pageid=3363>. It is a great resource for both scientific and sentimental reasons!). I have both good and bad memories about those sessions 26 years ago. First, my trip was coordinated by a travel agent who obviously had no idea of what was going on, making my actual arrival a miracle. Second, though I submitted two posters and was told that they were both accepted, I was informed that we would only have one poster board for both of them due to space constraints! (Hmmm, according to the archive David Hill was on the Program Committee...). Life was different in 1983. At that time the organization was apparently averse to simultaneous meetings, so mornings focused on oral presentations and evenings had either a

Over 90% felt that the quality of both the oral and poster presentations was good to excellent.

symposium or a poster session. That year the meeting had 46 slide talks, 86 posters and 15 symposia speakers. For comparison, the upcoming meeting will have 22 powerpoint speakers, 322 posters and 43 symposium speakers. Even then, however, the meeting was a great place to meet and greet. I came to Sarasota knowing almost no one in chemical senses and was impressed by finally getting to put faces together with the names I had learned so well. I met many open and friendly people who were interested in what I was doing. And, sitting in the Boathouse, I initiated a research collaboration with Al Farbman that later paid off with a significant paper. Not a bad start! Of course, my circle of friends and my understanding of the community expanded with each subsequent year, and the knowledge I have carried away from meetings has helped to drive my work and career. I'm sure a lot of us can tell similar stories.

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PRESIDENT'S REPORT

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AChemS continues to play a significant role in many arenas. Besides helping to mentor young students and faculty and connecting people with similar interests, the organization serves as the public face of the chemosensory community. All of us need to help AChemS maintain strength and grow. You can (and should) help in a number of ways. The best would be to volunteer to serve on its committees (for a list, see <http://www.achems.org/i4a/pages/index.cfm?pageid=3311>) or to run for an office (<http://www.achems.org/i4a/pages/index.cfm?pageid=3288>), as a large number of dedicated and careful people are

needed. You can also help AChemS financially. As I mentioned in an email sent out a few months ago, AChemS is a registered 501(c)(3) organization, and, as a result, contributions may be deducted from your taxes. Your donations will enable graduate students to attend the meeting, the planning of novel and creative social events, more education or community outreach, or make a difference in many other ways. As pointed out elsewhere in the newsletter, big changes are in the air with the impending move of the meeting. Now more than ever the organization needs your support and help!

REPORT FROM THE CLINICAL RELATIONS COMMITTEE

Claire Murphy, PhD, *AChemS Clinical Relations Committee Chair*

The Clinical Relations Committee Members, Linda Bartoshuk, Beverly Cowart and I would like to thank Tisha Kehn for arranging a larger space for the Clinical Luncheon function at ISOT this year. The luncheon had its largest turnout ever, with more than 100 people participating. The speaker, Dr. Web Ross of the Honolulu Aging Study, whose research on the use of odor identification to predict Early Parkinson's disease in a community population sample has drawn national attention, was new to the chemical senses community and he provided a fresh look at chemosensory translational research. He was introduced by Dr. Wen G. Chen of the National Institute on Aging.

We would like to thank the Executive Committee and the Ernest Polak Foundation for supporting student participation in the event and the National Institute on Aging for student support and support for bringing our speaker to the mainland for ISOT. We especially appreciate the student support at this event to facilitate introducing the next generation of scientists to translational research on clinical problems.

A heartfelt thank you to Dr. Wen G. Chen, Program Director of the Sensory and Motor Systems Program in the Neuroscience Program at the National Institute on Aging, for collaborating on an NIA conference grant that provided \$50,000 support for ISOT. She is actively stimulating research on the mechanisms of chemosensory aging and in targeting translational research and mechanisms of age-related diseases that interface with clinical disorders that show impairment in the chemical senses. Wen received her PhD from Harvard Medical School, where she worked on activity-dependent regulation of BDNF in neurons, and did postdoctoral work at MIT developing mass spectrometric approaches for studying signal transduction pathways. Newly arrived at the NIA after serving as an Editor of *Neuron*,

Wen took over the Sensory and Motor Systems Program in the Neuroscience program in 2007 from Judy Finkelstein, who had been a strong advocate for chemosensory research. Wen has proved equally enthusiastic and has a keen interest in the underlying basic mechanisms of aging that apply to the chemical senses.

We would like to thank the Executive Committee...for supporting student participation in the Clinical Luncheon function at ISOT.

We are grateful to her and to the NIA for the funds that provided support (the NIA-ISOT Young Investigator Travel Awards) to promote meeting attendance for seven young investigators interested in research that bridges the chemical senses and aging, including age-related diseases and clinical problems. This investment in and nurturing of our young scholars is especially appreciated. In addition to the Clinical Luncheon speaker and support for young investigators, the grant supported three symposia to stimulate research on the peripheral and central mechanisms of age related chemosensory impairment. We appreciate all of Wen's efforts at the NIA to provide funds to stimulate chemosensory research and coordinating her efforts with Barry Davis and NIDCD, who have been unflinchingly vigorous in their support of the chemical senses.

This investment from the Aging institute to stimulate broad research on mechanisms of chemosensory aging is timely. As the NIH prepares to spend the more than \$10.4 billion awarded by the American Recovery and Reinvestment Act, Wen has been active in alerting the membership of AChemS to NIA-related opportunities that may be of interest for supporting chemosensory research.

MEMBERSHIP REPORT

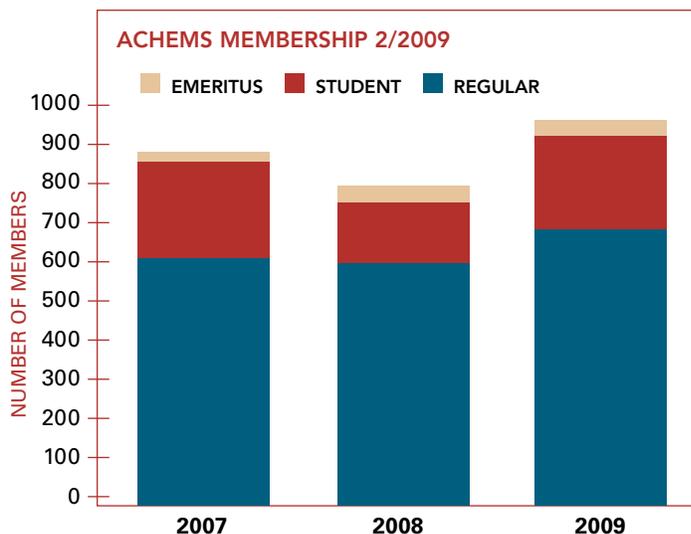
Pam Dalton, PhD, *AChemS Membership Chair*

To date, 696 members have paid dues through 2009. This number is expected to rise somewhat prior to the annual meeting, as we are currently in a dues drive to enable members to vote for officers. The dip in membership numbers for 2008 was due to the large number of gratis meeting registrations at ISOT 2008. As can be seen in the accompanying chart, however, our membership numbers are increased substantially over 2007, with the largest gain in regular members. Since 7/2008, 117 new members have joined the organization, equally split between regular and student members. The number of emeritus members has increased only slightly.

MEMBERSHIP NUMBERS

	2007	2008	2009
Regular	604	575	673
Student	234	187	251
Emeritus	12	23	25
Total	850	785	949

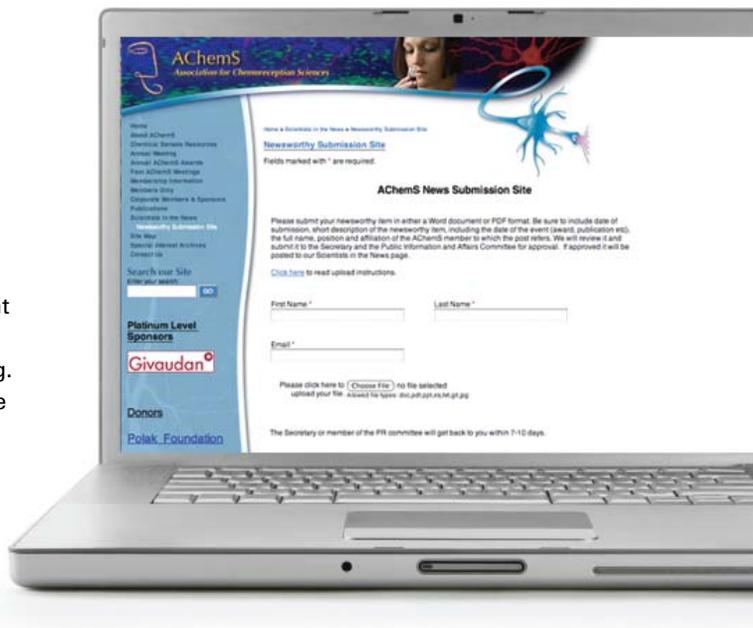
Corporate membership is now at 6 companies.



A NEW PROCESS FOR SUBMISSION OF NEWSWORTHY ITEMS FOR POSTING ON THE ACHEMS WEBPAGE

Dana Small, PhD, *AChemS Secretary*

The Executive Office worked with the Public Relations Committee to implement a mechanism for people to submit newsworthy items for posting to the AChemS webpage. Members and nonmembers interested in submitting an item will find a link to the AChemS News Submission Site on the AChemS Homepage. Once at the submission site, one can click on a button for detailed instructions. In brief, one uploads a word or pdf document containing a suggested bullet title, the URL to link to the article or event of interest, a list of the files being sent (e.g. articles, text, images), the name of the person responsible for the content submitted, the date of the event/news and the expiration date of the posting, if any. All submissions will be reviewed by the AChemS Secretary and Public Information and Affairs Committee for approval. If approved, newsworthy submissions will be posted to our Scientists in the News page. Members submitting newsworthy articles will receive an email reply regarding the status of their submission within 7-10 days.



NEW DEVELOPMENTS AT CHEMICAL SENSES

Tim McClintock, PhD and Sue Travers, PhD, *Chemical Senses Executive Editors*

The newly created position of Editor-in-Chief of *Chemical Senses* has been accepted by Prof. Dr. Wolfgang Meyerhof, Chairman of Molecular Genetics, German Institute of Human Nutrition, Potsdam-Rehbruecke, Germany. Prof. Meyerhof will enhance the ability of the journal to plan for the future, respond more flexibly to current events, and serve the chemical senses research community worldwide. The scope of the journal will not change.

Submissions to *Chemical Senses* remained stable in 2008 compared to past years and AChemS members once again submitted a majority of the manuscripts.

For any published paper that acknowledges an NIH funding source, Oxford University Press will automatically deposit the paper in PubMed Central as a service to authors. OUP will deposit the article for you, irrespective of whether the author chooses to pay for immediate open access (Oxford Open option). As before, open access begins immediately for those articles whose Oxford Open option charges are paid, otherwise papers are made freely available 12 months after publication.

NEW EDITOR-IN-CHIEF APPOINTED FOR CHEMICAL SENSES

Charles A. Greer, PhD, *Publications Committee Chair*

In response to an initiative set in place by Claire Bird of Oxford University Press (OUP), the Editorial Board structure of *Chemical Senses* (CS) is undergoing a significant reorganization. Up to this time, the 3 largest chemical senses organizations, JASTS, ECRO and AChemS, have each appointed Senior Editors on behalf of the journal and also reviewed and endorsed the appointment of the remainder of the Editorial Board. While this has given the organizations a significant voice in determining the leadership of CS, it has also been problematic at times as authors have tried to determine the most appropriate Senior Editors to select for manuscript submissions. Moreover, it left CS without an overall voice of authority and leadership.

Beginning in mid-2008 I represented AChemS in meetings held with Annick Faurion of ECRO, Yuzo Ninomiya of JASTS and Claire Bird representing Oxford Journals, OUP. The discussions began with a clarification from Claire on the objectives of Oxford University Press in reorganizing the editorial board of CS, which focus primarily on establishing a hierarchy in which the overall responsibility for the journal rests with a single individual. This is, in the experience of OUP, the most successful model and certainly one which is widely used throughout science.

A request for applications or nominations for the new position of Editor-in-Chief of CS was widely distributed last summer and early fall using both the email lists for AChemS, JASTS and ECRO, as well as advertisements in CS. Interested applicants were asked to submit a letter of intent as well as a general organizational plan that would be implemented under their leadership.

We received a number of highly qualified applicants but after much discussion, the choice was narrowed to Dr. Wolfgang Meyerhof. Dr. Meyerhof is the Professor and Chairman of the Department of Molecular Genetics in the German Institute of Human Nutrition at Postdam-Rehbruecke. Dr. Meyerhof, the author of more than 150 peer reviewed papers and chapters, has published widely on molecular mechanisms involved in taste and has been a strong advocate and participant in chemosensory related organizations and meetings. Dr. Meyerhof graciously accepted the offer from OUP and will assume his new position as Editor-in-Chief beginning on April 1, 2009. Following will be a reorganization of the current editorial board. Dr. Meyerhof and OUP will be announcing at a later time the details of the reorganization, but it is important to note now that he will be depending upon the expertise in the current board and the advice of AChemS, ECRO and JASTS as he moves forward with his plan.

Perhaps needless to say, we should wish him the very best in his efforts. I urge all members of the chemosensory communities to support Dr. Meyerhof and his editorial board as they seek referees to evaluate upcoming manuscript submissions. Moreover, I urge you most strongly to look closely at CS for your next manuscript submission.

In closing, I would also like to recognize the exceptional leadership and creativity that all of the Editors and Editorial Board members of CS, both current and past, have shown during their tenure. They have been in attendance as our field has undergone climatic changes in the past 30 years and they continually sought to make CS the most effective vehicle for communicating those changes. I believe that we owe them all a debt of gratitude.

A BRIEF RETROSPECTIVE

Dana Small, PhD, *AChemS Secretary*

Since its inception in 1979 the AChemS Annual Meeting has been held at the Hyatt Sarasota (with the exception of the years AChemS co-occurs with ISOT). This year marks our final year. Many of us are dreading the departure. We are wondering how a new environment will shape the meeting, and more specifically, how we will get along (or get our drinks) without Bobby the bartender and the Boat House? In the spirit of commemorating the fabulous years AChemS has had with the Hyatt I contacted some of our members and asked them to recall some of their personal "Hyatts" and Lows.

The "Hyatts"

1. Everyone said "The Boat House"; or "The Boat House and the donation of award winner's funds to the bar bill"; or "The time Peter Mombaerts dedicated all his award money to an open bar policy at the Boat House"
2. In the very early days of AChemS the beach was topless and Gordon Shepherd said: "Great Scott!"
3. Bobby the bartender; that guy just doesn't stop smiling.
4. Posters on Elephant Chemosensation.
5. Dave Hill and Peter Brunjes throwing toilet paper rolls from the top floor.
6. The time Kim Holland set up a BBQ on the wasteground where the condos now stand and grilled fish till late into the night.
7. The time Charlie Greer jumped into the pool with all of his clothes on, after vaulting over a small fence and shouting, in order to win a \$100 bet.
8. The time Barry Green kept putting ice in people's mouths (at the Boat House) and kept asking "did you taste that?" Later that year a more sophisticated version of this experiment demonstrating thermal taste came out in Nature. It pays to be observant at the Boat House.
9. The time Linda Buck went skinny dipping in the Hyatt pool. (Not so sure this was a reliable source).
10. The time John Prescott went skinny dipping in the Hyatt pool. (I will vouch for this one).
11. The beer tasting event. (Why don't we do this anymore?)
12. Toasting the Nobel Prize winners!

The Lows

1. The time the graduate students were banned from the pool after dark because they were making too much noise. (Thankfully this did not last long.)
2. The time several distinguished guests were told that they would have to find another hotel because they had not noticed that the Hyatt had booked them in for one fewer night than the meeting.
3. "A Personal low, while high: In my earlier childish days, while attempting to discreetly spy on Stuart Firestein and Laurence Dryer sitting outside the Boathouse at 2am I tripped and fell into one of the big planters that used to separate the walkways from the garden." – Rachel Herz (Wish I had witnessed this.)
4. Getting a room without a balcony even though you reserved early and specially requested one.
5. Eating Boat House food day in and day out. (I guess it's not the food that makes us so fond of this place!)
6. Winning a student travel award but having to run the slides or lights from 8-11 Friday night – or worse 8-12 Saturday morning.
7. Very loud "muscle boats" idling in front of the Boat House.

Looking Forward

Clearly we all have fond memories of our time at the Hyatt, or perhaps more precisely, the Boat House. Many of us felt like we grew up there and are sad that our students won't have the same experiences. However, as we begin preparing ourselves for the transition to the Tradewinds Resort in St. Petersburg it may help to keep the following in mind:

1. This is going to come as a shock, so brace yourself... The Boat House is no longer "the Boat House!" Yes, the Hyatt has changed it to meeting space. They have renovated their indoor bar, now called "Currents"; but it is just not going to be the same. It is clearly time to move on.
2. We are leaving the Hyatt because of our success in attracting new members.
3. The Tradewinds Resort is on 5 acres of white sandy beach.
4. The pub (The Sand Bar) overlooks the beach and it has a Karaoke machine...
5. There are 5 pools.
6. There are microwaves, refrigerators, toasters and coffee makers in the room.

We all look forward to a successful transition to St. Pete's next year!

A PRELUDE TO ACHEMS XXXI

Donald A. Wilson, PhD, *Program Chair* (Donald.wilson@nyumc.org)

The 31st annual AChemS meeting will be held at the Hyatt Sarasota in Sarasota, Florida from April 22 to April 26, 2009. AChemS members submitted nearly 400 abstracts and many wonderful symposia proposals this year. The program committee and I sifted through these to hopefully put together an engaging and informative program. As you may know, every past regular meeting of AChemS has been held at the Hyatt Sarasota. However, we have been growing out of the facilities for several years. Next year (AChemS XXXII, 2010) we will meet in St. Petersburg, Florida. Come and help us give a fond farewell to Sarasota and the Boathouse!

The program this year will include:

Givaudan Lecture

Dr. Carla Shatz will deliver the Givaudan lecture. Dr. Shatz is Professor of Biology and Neurobiology and the Director of Bio-X at Stanford University. Dr. Shatz and her group have made seminal discoveries about the development and plasticity of the visual cortex. Her talk is entitled "Tuning up Circuits: Brain Waves, Immune Genes and Synapse Plasticity".

Specialty symposia

"Presidential Symposium: On Beyond Glomeruli" Speakers will provide a peek into processes occurring past the olfactory bulb glomeruli that contribute to olfaction.

"Industry Symposium" A platform for industry, policy makers as academic scientists and students to discuss applications and knowledge gleaned from industry and basic science. The symposium will be followed by a reception with buffet and cash bar.

Symposia

"Gender effects on olfactory processing" Olfactory detection and processing differs between males and females. The speakers will discuss recent work describing molecular mechanisms in both the fly and mouse that underlie these gender differences that have been identified.

"Development and plasticity: First central chemosensory relays" Forming patterns of central neurons in functional groups requires appropriately timed waves of birth, migration and differentiation, in a location-specific manner. Speakers will illustrate how taste and olfactory nuclei use various mechanisms assemble brainstem or olfactory lobe centers.

"Reciprocal interactions between primary taste and olfactory processing networks and higher cognition" The speakers will present ground-breaking research highlighting (1) the way in which taste, flavor and odor identification are influenced by top-down processes

such as attention, expectation, belief and stimulus-relevant linguistic experience; and (2), contrarily, the active roles played by "early" odor and taste cortical networks in higher cognitive processes such as decision-making.

"Functional Evolution of Chemosensory Receptors"

Symposium will address the functional evolution of chemosensory receptors by combining studies from both the bioinformatics point of view and the functional biology point of view.

"Making Sense of Fat Taste" Surprisingly, given the close link between dietary fat intake and the development of obesity, until recently there were little empirical data regarding the mechanisms the body uses to recognize dietary fat. The speakers will summarize the recent findings on fat taste from the molecular through behavioral levels in rodents through humans.

"Follow the head, not only the nose: Top-down influences on olfactory Perception" Recently, there has been a growing body of evidence showing that experiential factors rather than structural stimulus features are critical for odor discrimination. The speakers will provide a state-of-the-art review of the evidence to back up this position, and to address its theoretical and practical implications.

"GABA in the olfactory system: from generation to differentiation" Talks will stress the functions of GABA in the olfactory system from the generation of the neurons in the subventricular zone until they reach their final granule cell and periglomerular positions and integrate into the olfactory circuit, including a focus on the network organization in which these neurons play functional roles.

Workshops (*The workshop format is designed to encourage active exchange and discussion beyond that possible with regular symposia*):

"NIH Workshop: Funding Opportunities for the New Investigator" Representatives from NIDCD will present information and insights into funding. New information about changes in NIH peer review and NIH budget health will also be provided at a session after the business meeting.

"Computational problems in sequential stages of odor processing" Advances in mathematical theory and computational techniques motivate new innovations and the speakers represent the breadth and depth of these various streams of research on olfactory processing.

Other planned events include the International Flavors and Fragrances Special lecture, the CheMA Social and, of course, there will be many posters and fine opportunities to discuss the great science going on within AChemS. I hope to see you all at AChemS XXXI. Let's make sure our last Sarasota AChemS is the best!

2008 ACHEMS

Award Recipients



Max Mozell Award for Outstanding Achievement in the Chemical Senses

The Max Mozell Award for Outstanding Achievement in the Chemical Senses is intended to recognize the accomplishments of a senior scientist working in the chemical senses. The research record should provide evidence of excellence and contributions that have a major impact on research in the chemical senses.



The 2008 Recipient of the Max Mozell Award was Dr. Robert Gesteland from the University of Cincinnati.

Dr. Gesteland writes:

The focus of most of my research has been the physiology and microanatomy of vertebrate olfactory receptor neurons and changes in instruments and methods to enhance discrimination of neuron responses and ciliary activity. Studies of the electro-olfactogram (EOG) recordable from the mucosal surface were inspired by David Ottoson. As a result of discoveries by Jerry Lettvin in the frog optic nerve, a microelectrode was developed which allowed receptor action potentials in single frog olfactory receptor neurons to be followed for extended periods. A principle result was that in population of millions of neurons presented with dozens of different odors, no two neurons could be found with similar responses. This result was widely distrusted in the physiological community since it was in sharp contrast to the findings from the visual system.

Next our focus was on olfactory cilia. Cilia grow continuously and are actively motile early. When they reach a remarkably long length, their motility ceases. Only at this stage do they have membrane conductance changes in response to odors. The discovery that the olfactory nervous system and parts of the forebrain are replaced every few months throughout life, unlike the remainder of the brain, raises a myriad of questions about how neural connections form and how perceptions are maintained.

Most recently, with Bob Frank, my interest has been in human odor responses. The result is the Sniff Magnitude Test, a brief procedure that quickly reveals reduced odor sensitivity. It is of interest because it has been established that premature loss of olfactory sensitivity is a precursor of Alzheimers', Parkinson's and other central nervous system diseases. We are currently interested in the dimensions of odor memory and perception.

Acknowledgements

I would like to acknowledge the contributions and friendships that have meant so much to me: Jerry Lettvin, Walter Pitts, Brad Howland, Al Farbman, Tom and Mitzie Getchell, Bob Mair, Michael Shipley, Lloyd Hastings, Dick Doty, Max Mozell, Gloria Adamek, Steve Kleene, Nancy Kleene, Jason Bailie, and Konstantin Rybalsky. The support of Barry Davis and the NIDCD, and the tolerance of the University of Cincinnati, Northwestern University and M.I.T. have provided many smiles.

The Moskowitz Jacobs Inc. Award for Research Excellence in the Psychophysics of Taste and Smell

Made possible by the generous support of Moskowitz Jacobs Inc., is awarded annually to an outstanding junior scientist in the field of psychophysics of human taste or olfaction. The research record should provide evidence of excellence and the promise to emerge as a leader in the field.



The 2008 Moskowitz Jacobs award was presented to Dr. Moustafa Bensafi from the Université Claude Bernard, Lyon.

Dr. Bensafi writes:

Mental images are defined as mental representations generated in the absence of any external event. Their role in the visual and auditory domains is crucial, especially in expertise. Their existence in the olfactory modality was largely explored during the last decades by scientists of different fields and the main aim of our research has been to understand the process by which such olfactory images are generated in the human brain.

In the visual domain, it was known that eye movements during imagery reenact those occurring during perception. Using olfactory psychophysics and functional brain imaging (fMRI) we have shown a similar mechanism in olfaction in that when human subjects imagined odors, they sniffed [J Neurophysiol. 98, 3254-62, 2007]. A second result of interest was that, as odor perception, mental imagery of pleasant and unpleasant smells activates different sub-regions of the piriform cortex [Nat Neurosci. 6, 1142-4, 2003]. This research supports the theory that the role of action (sniffing) during mental imagery is to activate an internal representation stored in memory, which will in turn contribute to generate the so-called mental image. In addition to this major project, we are studying in two other projects (a) how odors influence mood and behavior in humans, and (b) how odor pleasantness is represented in the human brain, and how it is modulated by sensorial and contextual cues.

Acknowledgements

Special thanks to Dr. Catherine Rouby and Pr. Noam Sobel. This work was conducted in their laboratories at the University of California at Berkeley (Prof. NS) and at the University Claude Bernard of Lyon and CNRS (France) (Dr. CR). Essential collaborators include Fanny Rinck, Johan Poncelet, André Holley, Thomas Hummel, Rehan Khan, Benoist Schaal, Nathalie Mandairon, Anne Didier, Marc Thévenet, Samuel Garcia, Belkacem Messaoudi, Bernard Bertrand and Vincent Farget. This work would not be possible without the support of the Fondation Fyssen, CNRS, INRA and ANR (France).



Ajinomoto Award for Young Investigators in Gustation

The Ajinomoto Award for Young Investigators in Gustation, made possible by the generous support of The Ajinomoto Corp., is awarded annually to an outstanding junior scientist who is an emerging leader in the field of gustation. The research record should provide evidence of excellence and contributions that have had or are likely to have a major impact on research in the field of gustation.



The recipient of the 2008 Ajinomoto Award was Dr. Ivan de Araujo from the John B Pierce Laboratory and Yale University.

Dr. de Araujo writes:

It is well established that brain dopamine systems are strongly stimulated by palatable compounds, such as sugars, via activation of dedicated gustatory pathways. In addition, my colleagues and I have recently shown that these brain dopamine pathways are also sensitive to the postingestive effects produced by caloric compounds, even in the absence of functional taste transduction. This observation led then to the present hypothesis that brain gustatory circuits, upstream to midbrain dopaminergic systems, might be under the influence of physiological signals from the periphery. Our laboratory will focus on describing the biological mechanisms that allow neurons of the central gustatory and dopaminergic systems to “sense” changes in the periphery, and thus modulate feeding behavior accordingly, even when no taste signaling is initiated within the oral cavity. We are particularly interested in the influence of the hormones insulin and ghrelin in modulating neuronal responses in these circuits. Conversely, we are also interested in the potential effects of gustatory stimulation on metabolism. In fact, central gustatory pathways strongly overlap with brain circuits involved in neuroendocrine and thermogenic control, including medullary and hypothalamic centers. By applying behavioral, calorimetric and neurochemical techniques to taste-blind and wild-type mice, we intend to characterize the role of taste receptor stimulation—in contrast to postingestive effects—in the regulation of thermal and endocrine reactions to the ingestion of different nutrients. In general, we are interested in the interplay between taste receptor activation and hormonal influences in determining whether a long-term acceptance or rejection will develop for a certain food.

Acknowledgements

I am very grateful to my doctoral and postdoctoral mentors E. Rolls, M. Nicolelis and S. Simon. I am also very fortunate to currently have the opportunity to interact directly with D. Small, B. Green, J. Verhagen and L. Marks at The J. B. Pierce Laboratory.



AChemS Young Investigator Award for Research in Olfaction

The AChemS Young Investigator Award for Research in Olfaction is awarded annually to an outstanding junior scientist who is an emerging leader in the field of olfaction. The research record should provide evidence of excellence and contributions that have had or are likely to have a major impact on research in the field of olfaction.



The recipient of the 2008 AChemS Young Investigator Award was Dr. Alan Carleton of the University of Geneva.

Dr. Carleton writes:

How neural networks encode sensory information in the brain and how to relate behavior to neuronal activities are key questions in neuroscience. Understanding the neural codes underlying brain function will be of great importance for future implementation of brain-machine interfaces.

We study the mechanisms controlling sensory perception and how different senses may interact. We would like to know precisely how sensory stimuli are coded by brain networks and how these representations may be influenced by experience and across different sensory modalities. In order to address these general questions, we study chemical senses as model sensory systems. Indeed, olfactory and gustatory systems are central to the behavior of rodents, are highly plastic and largely modulated by neuromodulatory brain centers. Furthermore they are probably the senses most naturally interacting together in behaving animals, especially during feeding behavior. We use a multidisciplinary approach combining in vitro and in vivo electrophysiology (patch clamp, multi-unit), in vitro and in vivo functional imaging (calcium, voltage-sensitive dyes imaging, intrinsic and synaptophluorin imaging), 2-photon microscopy, lentivirus gene transfer and behaviour. Among different research topics, we are interested in studying the network mechanisms underlying olfactory coding, the synaptic mechanisms shaping olfactory networks function and the impact of adult neurogenesis on olfaction.

Acknowledgements

I wish to thank the following institutions and foundations for their financial support: the Brain Mind Institute - Ecole Polytechnique Fédérale de Lausanne, the University of Geneva, the Swiss National Foundation, the Leenaards foundation and the network of European Neuroscience Institutes from the European Union (ENI-net).



International Flavors and Fragrances Award

The IFF Award for outstanding research on "Molecular Systems of Taste" is made possible by the generous support of International Flavors and Fragrances Inc, and is awarded for critical advances of long-lasting impact, in the understanding of the molecular basis of taste.



The recipient of the 2008 International Flavors and Fragrance Award was Dr. Danielle Reed of the Monell Chemical Senses Center.

Dr. Reed writes:

Quantitative genetics is concerned with the inheritance of those differences between individuals that are of a degree rather than of a kind, for instance, the threshold at which someone can experience bitterness or an odorant, or the pleasure that comes from tasting sugars. An understanding of these differences is of fundamental significance and has led to important insights about the molecular mechanisms that underpin the biology of taste and smell. The focus of my work has been to understand the precise relationship between genotype and phenotype in both humans and rodents, as well as how development and environment can affect those relationships. This research is pursued using linkage analysis and association methods, both of which exploit the behavior of chromosomes during meiosis. My collaborators and I have conducted projects with linkage analysis for saccharin preference in mice followed by positional cloning, which uncovered a protein that is now known to be the subunit of a sweet receptor (Tas1r3); similar types of human family-based linkage studies assisted in the identification of a receptor on human chromosome 5 (TAS2R1), which is involved in the perception of the bitter compound propylthiouracil. Likewise association studies among unrelated people helped to define how haplotypes of the bitter receptor TAS2R38 affect bitter perception. Our ongoing work is aimed at understanding the heritability and molecular underpinnings of perceived sweet intensity of human twins, the relationship between olfactory receptor genotype and smell phenotypes, and the developmental aspects of genotype-phenotype relationships in human children. Finally, looking ahead, we are investigating the molecular basis of nontraditional tastes using inbred mouse strains that differ markedly in the consumption of calcium and other minerals.

Acknowledgements

Bringing together phenotype and genotype requires the help of many expert teachers and collaborators, and I would like to acknowledge the contribution of Linda M Bartoshuk, Gary K Beauchamp, R. Arlen Price, Alexander A Bachmanov, Michael G Tordoff, Julie A Mennella, Nicholas G Martin, Charles J Wysocki, Paul AS Breslin and Susan E Coldwell. This research has been partially supported by grants R01DC004698 and R01DK58797 as well as funding from the Monell Chemical Senses Center.



Sense of Smell Institute's Science of Fragrance Award

The 2008 Sense of Smell Institute's Science of Fragrance Award for best Industry-Relevant research presentation is awarded to the best presentation relevant to companies concerned with the creation or marketing of fragrances. A panel of academic and industry scientists selects the winner of the award, which is funded by the Sense of Smell Institute of the Fragrance Foundation.

The recipient of the 2008 Sense of Smell Institute's Science of Fragrance Award was Dr. Rafi Haddad of the Weizmann Institute of Science for his work entitled "Predicting odor pleasantness with an electronic nose" by Raffi Haddad, David Harel and Noam Sobel.

Research focus:

Olfaction consists of a set of transformations from a physical space of odorant molecules, through a neural space of information processing, and into a perceptual space of smell. Elucidating the rules governing these transforms depends on establishing valid metrics for each of these three spaces. Researchers tried to tackle these questions, suggesting rules relating odorant structure to either the neural response it elicits or the perceptual intensity or quality it generates. Still, these studies are only applicable to subsets of odorants and usually fail when tested on novel odorants. One reason for this shortcoming is the lack of accurate methods to measure odor stimuli.

To measure and control olfactory stimuli qualitatively we need to identify the molecular features that govern the biological interaction. However, given the vast number of molecular features and the diversity of olfactory receptors across species, it is unlikely that one particular molecular feature will dominate this interaction. One possible approach to bypass this problem is to represent each odorant by a very large number of molecular descriptors, albeit captured in one value.

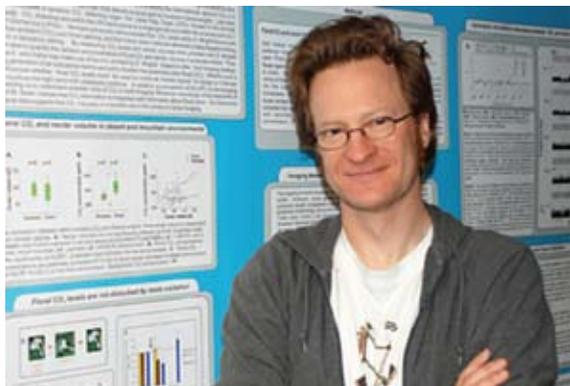
This approach proved to be valuable in two studies we have recently published (Khan 2007 et al J. Neuroscience; Haddad et al, 2008, Nature Methods) in which we predicted odor perception and neural response based on odor structure alone. A second approach is to use an electronic nose. Electronic noses mimic the olfactory system by using a large set of diverse sensors. The set of the electronic nose sensors' signals can be used to compare odors. Using this method we have shown that an eNose can be used to predict odor pleasantness as rated by humans for both neat odorants as well as odorant mixtures. To summarize, developing new methods to measure odor stimuli is crucial for understanding the relationship between the stimuli, the neural response and perception, and we have focused on this question.

Acknowledgments

This work was supported by an FP7 Ideas Grant 200850 from the European Research Council.

Don Tucker Memorial Award

The Don Tucker Memorial Award is made to a graduate student member of AChemS who makes an outstanding presentation at the annual AChemS meeting.



The recipient of the 2008 Don Tucker Award was Aaron Beyerlein of the University of Arizona.

Polak Young Investigator Awards

The purpose of this award is to encourage and recognize innovative research at the annual conference by young investigators. The Polak awards are funded by the IIsje Werner-Polak Memorial Fund in memory of their niece, Ghislaine Polak gassed by the Nazis in 1944 at the age of 7 and the late Ernest Polak.



The recipients of the 2008 Polak Young Investigator Awards were Dr. John Cave, Dr. Hong Liu, Dr. Joel Mainland, Dr. Shoba Hiramangalathu, Dr. Aurelie Vandenbeuch and Dr. Jeffrey Riffell.

The 2008 Minority and Clinical Travel Fellowship Awardees were:

Juan Aggio, Georgia State University
Genevieve Bender, Yale University
Ronda Bibs, Alabama State University
Kristina Gonzalez, Clark University
Lauren Kent, University of Illinois

Jasmine Loveland, Smith College
D. Carolina Penalva-Arana, Indiana University
Katheryn Pointer, University of Cincinnati
Tuan Tran, University of Colorado Denver
Ernesto Salcedo, University of Colorado Denver

Upcoming Meetings



AChemS XXXI Annual Meeting

Hyatt Sarasota
Sarasota, Florida
April 22-26, 2009
www.achems.org



Summer School on Human Olfaction

Dresden, Germany
July 19-25, 2009
http://www.tu-dresden.de/medkhno/riechen_schmecken/summerschool_2009.htm



Chemical Senses International Meeting

Monell Chemical Senses is pleased to announce and invite you to attend the first international meeting on the chemical senses to be held in China. The meeting will be in Beijing, China on November 15- 17, 2009 and is being organized by the Monell Chemical Senses Center in collaboration with colleagues in China.
www.chinachemosensory.org

AChemS extends thanks to our generous donors: Peter Brunjes, PhD and Scott Herness, PhD



ISOT XV

July 21-26, 2008 | Hyatt Regency | San Francisco, California

The Association for Chemoreception Sciences
International Symposium on Olfaction and Taste



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- 1 Christian Magot and Mark Pelletier
- 2 Krystina Rankin, Theresa White and Monique Von Smeets
- 3 Monique Von Smeets and John Prescott
- 4 Susan Ward, David Hornung, Paul and Catherine Kent, Steve and Lisa Youngtob, Don and Sandy Leopold, Theresa White
- 5 Vanaeyah Tran, Hevti Desai, Si Lam, Ray Abarintos
- 6 Rich Costanzo and friends



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- 7 Chinese Lion Dancers
- 8 AChemS welcome message at the baseball game
- 9 Tom Finger at the game
- 10 AChemS attendees enjoying the game



- 11 Gordon Shepherd
- 12 Deigo Restrepo
- 13 Bruce Halpern
- 14 Tom Finger
- 15 David Julius "Chili Pepper Man"
- 16 Peter Brunjes and Bruce Halpern



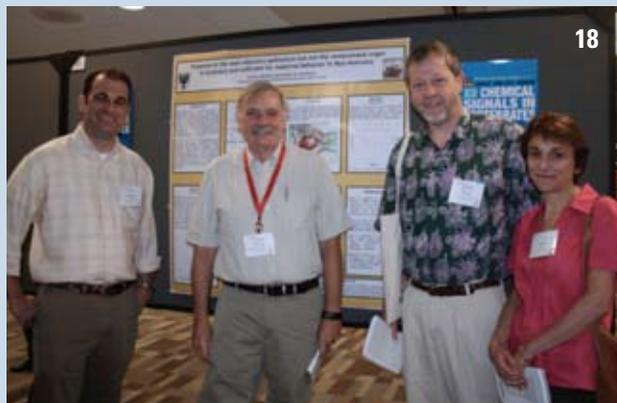
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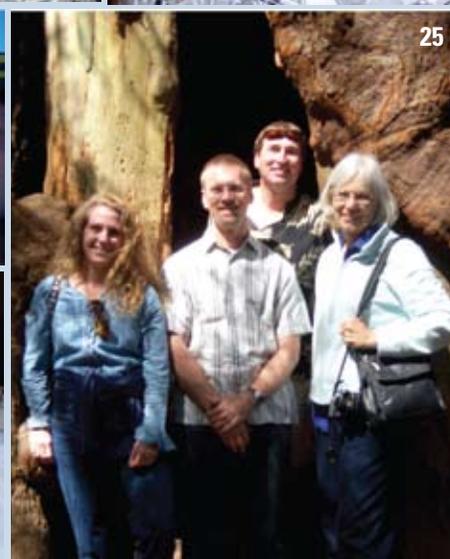
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17 JoAnn Garcia, Debi Fadool, Jennifer Stratford and John Thompson
18 Steven Munger, Chuck Wysocki, Rob Mason and Jane Hurst
19 Annick Faurion, Nirupa Chaudhari, Claire Murphy and Dana Small
20 Ana SanGabriel and Yoko Ogiwara

21 Melissa Cavallin and Mary Lucero
22 Debi Fadool and Melissa Cavallin
23 Paul Jenkins, Dyke McEwen, Jeff Martens
24 Pat and Mike Meredith
25 Debi Fadool, Scott Herness, Alan Nighorn and Lynne Oland