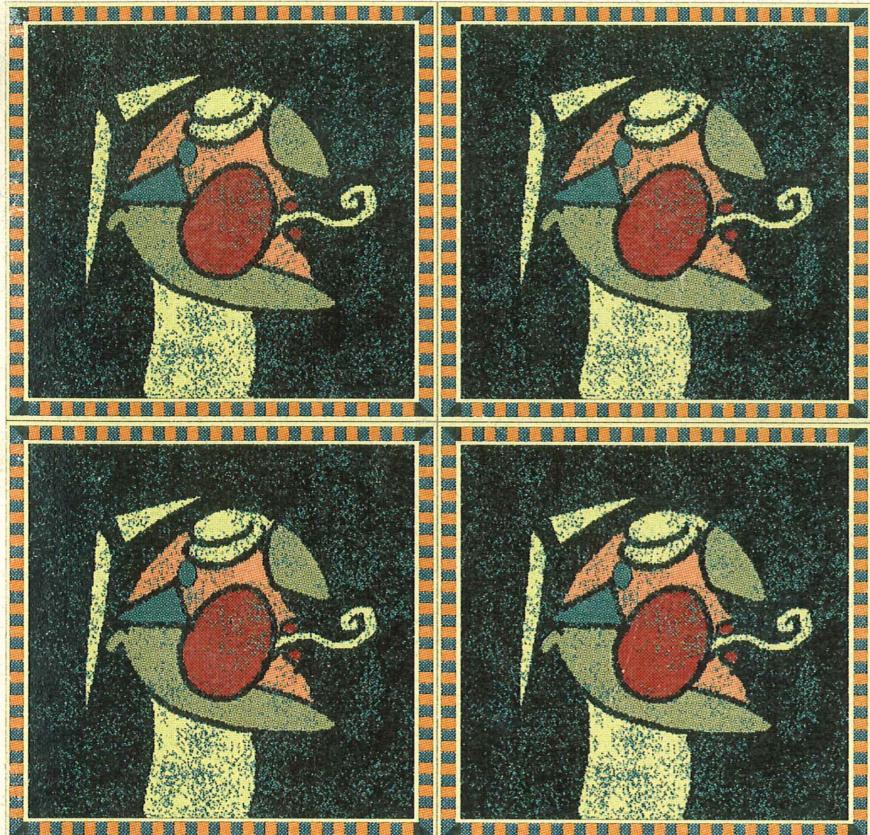


The Association for Chemoreception Sciences
presents

Impressions on Olfaction and Taste



Future Meetings

ACheM S XXII
April 26 – 30, 2000

ACheM S XXIII
April 25 – 29, 2001

A Feast for the Chemical Senses

ACheM S XXI April 1999

Sarasota, Fla.

The Association for Chemoreception Sciences gratefully acknowledges support from its corporate members:

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**Twenty-First Annual Givaudan-Roure Lectureship
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**Fourteenth Annual Takasago Award for Research in Olfaction
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Moskowitz Jacobs Incorporated**

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**Support for the Clinical Luncheon
Campbell Soup**

**The Association acknowledges grant support from:
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GENERAL INFORMATION

1. Registration will be in the Longboat Room & Gallery on Wednesday evening, 5:00-7:00 P.M., and in the morning during the meeting.
2. All slide sessions will be held in the Sara Desoto Room. All speakers in slide sessions should meet with the session chairperson and give the slides to the projectionist at least 20 minutes prior to the start of the session.
3. The poster sessions will be held in the Hernando Desoto Room. Posters should be put on the appropriate board (as indicated by the number with a "P" in the program book). Posters for morning sessions should be posted before 8 A.M. and should be left up until at least 2:00 P.M., but should be removed by 4:30 P.M.; posters for the evening sessions should be posted by 5:00 P.M and must be removed by midnight.
4. The Clinical Luncheon will take place on Saturday from 12:15 - 2:00 P.M. in the Florida Room. Tickets are on sale in the Longboat Room.
5. The Industrial Reception will take place on Friday from 5:30-7:00 P.M. in the Florida Room. Tickets are on sale in the Longboat Room.
6. The Beer Tasting will be held in the Florida Room on Saturday from 5:00-7:00 P.M. Tickets are on sale in the Longboat Room. Admission also requires two bottles of your favorite microbrew.
Also, bring an unmarked bottle of your best for the home brew contest!
7. There will be a van from the hotel to Lido Beach Thursday and Saturday afternoons. The van will leave from the front of the hotel on the hour, beginning at 1:00 P.M. and returning on the half-hour from Lido Beach. The last van will leave the beach at 4:30 P.M.
8. There will be a van from the hotel to the softball game. The van will leave from the hotel at 3:00 P.M. on Friday and return to the hotel at the end of the game.
9. AChemS will sponsor an opening buffet reception on Wednesday from 6:30-8:00 P.M., and a limited number of breakfast pastries will be available each morning beginning at 7:00 A.M.
10. The Hyatt will provide a cash "Quick-Lunch Sandwich Cart" at the conference center daily at 12:00 P.M. The Prefunction area is reserved for eating your lunch and socializing if you do not care to go outside and wish to meet with other conferees.

Please refer to the program book for listings of Symposia, Special Lectures, and other Special Events.

Wednesday, April 14, 1999

ASSOCIATION FOR CHEMORECEPTION SCIENCES

Twenty-first Annual Meeting

12:00-4:30 p.m.	Executive Committee Meeting
12:00-4:30 p.m.	Satellite Symposia:
	Advances in Brain Imaging and Electrophysiological Measurement of Human Olfactory Function in Health and Disease (<i>Four Flags Court</i>) <i>Organizer: R.L. Doty</i>
	Nutritional Implications of Cephalic Phase Responses (<i>Florida Room</i>) <i>Organizer: R.D. Mattes and K. Teff</i>
5:00-7:00 p.m.	Registration (Long Boat & Gallery)
6:00-6:30 p.m.	Minority Fellows Organization Meeting (State Room) <i>Organizer: J. Caprio</i>
6:30-8:00 p.m.	Opening Buffet (Sara and Outdoors)
8:00-8:30 p.m.	Welcome, Opening Remarks & Awards Ceremony (Hernando Desoto Room) <i>C.A. Greer, President</i>
8:30-9:30 p.m.	Givaudan-Roure Lecture (Hernando North and South) Dr. A.J. Hudspeth Howard Hughes Medical Institute and Laboratory of Sensory Neuroscience, The Rockefeller University, New York <i>Chairperson: S.C. Kinnamon</i>
	"How Hearing Happens: Transduction, Tuning, and Transmission by Hair Cells of the Internal Ear"
9:30 p.m.	Social Reception and Cash Bar (Gallery)
9:30 p.m.	Organizational Meeting for Students with Travel Awards (Hernando Desoto Room) <i>Organizer: A.J. Nighorn</i>

Thursday, April 15, 1999

Thursday, April 15, 1999

SLIDES

Thursday Morning - 8:00 a.m. - 10:00 a.m.

Olfactory/Vomeronasal Epithelium

Chairperson: S. Firestein

- 8:00 a.m. 2 A Novel Family of Seven-Transmembrane Proteins: Candidate Olfactory Receptors in Drosophila.
Warr, C.¹, Clyne, P.¹, Freeman, M.¹, Lessing, D.¹, Kim, J.² and Carlson, J.R.¹ ¹Dept. Molecular, Cellular and Developmental Biology, Yale University, New Haven CT 06520, USA; ²Dept. Ecology and Evolutionary Biology, Yale University, New Haven CT 06520, USA
- 8:15 a.m. 3 High Resolution Ca²⁺ Imaging of Olfactory Epithelium and Vomeronasal Organ in a Novel Mouse Slice Preparation.
Leinders-Zufall, T., Puche, A.C., Shipley, M.T. and Zufall, F. Department of Anatomy and Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201
- 8:30 a.m. 4 Electrophysiological Characterization of Odor Responses of Rat and Mouse Olfactory Receptor Neurons in Isolated Epithelial Patches
Ma, M., Chen, W.R., and Shepherd, G.M. Section of Neurobiology, Yale University School of Medicine, New Haven, CT 06510
- 8:45 a.m. 5 Targeted Disruption of the OCNC-2 Gene Reveals a Restricted Pattern of Expression.
Munger, S.D., and Reed, R.R. Howard Hughes Medical Institute, Dept. Molecular Biology and Genetics, Johns Hopkins Medical Institutions, 725 N. Wolfe St., PCTB 818, Baltimore, MD 21205
- 9:00 a.m. 6 Odor Transduction in Normal Mice and Mice Deficient in Subunit 1 of the Olfactory CNG Channel.
Delay, R. J. and Restrepo, D. Department of Cellular & Structural Biology and the Rocky Mountain Taste & Smell Center, University of Colorado Health Science Center, Denver CO 80262
- 9:15 a.m. 7 Functional Cloning and Reconstitution of an Odorant Receptor in Single Olfactory Neurons
Touhara, K.^{1,2}, Shintaro S.³, Inaki, K.², Hirono, J.⁴, Sato, T.⁴, Sakano, H.³, Tatsuya, H.² ¹Department of Integrated Biosciences, Graduate School of Frontier Sciences, The University of Tokyo, Tokyo 113, Japan, ²Department of Neurochemistry,

Thursday, April 15, 1999
Faculty of Medicine, The University of Tokyo, Tokyo 113, Japan, ³Department of Biochemistry and Biophysics, Faculty of Science, The University of Tokyo, Tokyo 113, Japan, ⁴Life Electronics Research Center, Electrotechnical Laboratory, Amagasaki 661, Japan

- 9:30 a.m. 8 A Central Role for the G_o Subunit of Heterotrimeric G-proteins in Regulating Lobster Olfactory Signalling.
McClintock T.S., Xu, F., Hollins, B. and Bose, S.C. University of Kentucky College of Medicine, Lexington, KY 40536-0298.
- 9:45 a.m. 9 Cloning of TRP2, A Candidate Transduction Channel for Mammalian Pheromone Reception.
Liman, E.R.¹, Dulac, C.², and Corey, D.P.¹ ¹Department of Neurobiology and Howard Hughes Medical Institute, Massachusetts General Hospital, Boston, MA 02114; ²Department of Molecular and Cellular Biology and Howard Hughes Medical Institute, Harvard University, Cambridge, MA 02138
- 10:00 a.m. Refreshment Break
- 10:15 a.m. - 12:15 p.m. Symposium: Adaptation in Vision and Olfaction
Chairperson: D. Restrepo
- 10 Dr. Edward Pugh, Jr.
Department of Psychology & Institute of Neurological Sciences,
Univ. of Pennsylvania, Phila. PA 19104
"Partitioning Light Adaptation in Salamander Rod Photoreceptors"
- 11 Dr. Pamela Dalton
Monell Chemical Senses Center, Philadelphia, PA 19104
" Psychophysical and Behavioral Characteristics of Olfactory Adaptation "
- 12 Dr. Frank Zufall
Department of Anatomy and Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201
"Cellular and Molecular Basis of Odorant Adaptation"
- 13 Dr. Johannes Reisert
Physiological Laboratory, University of Cambridge, Downing Street, Cambridge CB2 3EG, U.K.
"Adaptation-induced changes in sensitivity in frog olfactory receptor cells."

Thursday, April 15, 1999

Thursday, April 15, 1999

POSTERS

Thursday Morning - 8:00 -12:15 p.m.

Feeding and Reproductive Behavior I
Olfactory Systems: Central Mechanisms

Feeding and Reproductive Behavior I

- P1 Chemosignalling in Rat: Unique Chemical Structures and Behavioral Responses.
14 Novotny, M.V.¹, Ma, W.¹, Zidek, L.¹ and Alberts, J.² ¹*Department of Chemistry, Indiana University, Bloomington, IN 47405;* ²*Department of Psychology, Indiana University, Bloomington, IN 47405.*
- P2 Repellent Effects of Capsaicin, Denatonium, and Vexar Plastic Mesh Plant
15 Protectors on Gnawing Behavior of Wild Norway Rats.
Shumake, S. A., Sterner, R. T., and Gaddis, S. E. *National Wildlife Research Center, 4101 LaPorte Avenue, Fort Collins, CO 80521*
- P3 The Effects of Chorda Tympani Transection and Regeneration on NaCl Detection
16 Threshold.
Kopka, S.L., and Spector, A.C. *University of Florida, Department of Psychology, Gainesville, FL 32611*
- P4 Effect of Aging on Bitter Taste Response and Gene Expression in Rats
17 Hoy, E. A.¹, Huque, T.², Stewart, C. N.¹, Brand, J. G.^{3,4}, and Mackler, S. A.,^{3,4}
¹*Dept. Psychology, Franklin & Marshall College, Lancaster, PA 17604;* ²*Monell Chemical Senses Center, Philadelphia, PA 19104;* ³*University of Pennsylvania, Philadelphia, PA 19104;* ⁴*Veterans Affairs Medical Center, Philadelphia, PA 19104*
- P5 Genetic Variation in the Syrian Hamster: Influence on Intake of Taste Solutions.
18 Frank, M.E.², and Blizzard, D.A.¹ ¹*Center for Developmental and Health Genetics, Pennsylvania State University, University Park, PA 16802;* ²*Department of BioStructure & Function, School of Dental Medicine, University of Connecticut Health Center, Farmington, CT 06030-3705.*
- P6 Salt Appetite is Abolished by Null Mutation of the *Isk* Gene.
19 Puchalski, R. B.^{1,2}, Kelly, E.¹, Bachmanov, A.A.¹, Tordoff, M.G.¹, Brazier, S.P.¹, Kuang, J.¹, Arrighi, I.³ and Barhanin, J.³
¹*Monell Chemical Senses Center, Philadelphia, PA 19104;* ²*Department of Pharmacology, University of Pennsylvania, Philadelphia, PA 19104;* ³*Institut de Pharmacologie Moléculaire et Cellulaire, CNRS-UPR 411, Valbonne, France*

- P7 NaCl Preferences in 13 Inbred Mouse Strains.
20 Bachmanov, A.A., Tordoff, M.G., and Beauchamp, G.K.
Monell Chemical Senses Center, 3500 Market St., Philadelphia, PA 19104
- P8 Sodium Detectability in Rats Is Not Influenced by Dietary NaCl Exposure or Size
21 of Anion.
Geran, L.C., and Spector, A.C.
Department of Psychology, University of Florida, Gainesville, FL 32611
- P9 The Effects of Dietary Salt Exposure After Weaning on Adult Solution Intake in
22 Rats
Snyder, D. J., Contreras, R. J., and Smith, J.C.
Program in Neuroscience, Department of Psychology, The Florida State University, Tallahassee, FL 32306-1270
- P10 The Effect of Water Deprivation and Early Developmental Dietary NaCl Exposure
23 on Taste Reactivity of Rats to NaCl and Water.
Couch, J.A., Markison, A., Sauer, B.C. and Spector, A.C.
Department of Psychology, University of Florida, Gainesville, FL 32611.
- P11 Rapid and Labile Short-Term Conditioned Taste Aversion in Free-Licking Rats.
24 Nardos, R.¹, Smith, J.C.², and Houpt, T.A.¹ ¹*Department of Biological Science, Florida State University, Tallahassee FL 32306;* ²*Department of Psychology, Florida State University, Tallahassee FL 32306.*
- P12 Conditioned Aversions and Preferences for Solid Foods in Rats.
25 Smith, P.L., and Smith, J.C. *Program in Neuroscience, Department of Psychology, The Florida State University, Tallahassee, FL 32306-1270*
- P13 The Role of Stimulus Intensity in Conditioned Taste Aversion.
26 Formaker, B.K., Frank, M.E., and MacKinnon, B.I. *Dept. of BioStructure & Function, School of Dental Medicine, University of Connecticut Health Center, Farmington, CT. 06030-3705*
- P14 The Taste of Linoleic Acid to the Male Albino Rat.
27 Smith, J. C., and Fisher, E. M. *Department of Psychology, The Florida State University, Tallahassee, FL 32306-1270.*
- P15 Taste Synergy Between Imp and Glutamate Ligands.
28 Delay, E.R.¹, and Roper, S.D. ² ¹*Regis University, Denver Colorado, 80221;* ²*University of Miami Medical School, Miami, FL*

Thursday, April 15, 1999

- P16 Taste Preferences of Brown Trout Juveniles from Different Sea Basins.
Sidorov S.S. *Department of Ichthyology, Faculty of Biology, Moscow State University, Moscow, 119899 Russia*
- P17 Preferences of European Starlings to Mixtures of Natural Plant Products
Clark, L. *USDA, National Wildlife Research Center, 4101 La Porte Ave., Fort Collins, CO 80521*
- P18 Two Discrete Learning Events In The Discrimination Of Binary Mixtures By Catfish
Valentincic T. *Department of Biology, University of Ljubljana, Vecna pot 111, 1000 Ljubljana, Slovenia; E-mail: tine.valentincic@uni-lj.si*
- P19 Feeding on Fructose and Glucose is Greater by *Drosophila* Exposed to Fructose than to Glucose in the Rearing Medium
Chua, G.C.H., Hwang, J.H., and Kennedy, L.M. *Neuroscience Laboratory, Biology Department, Clark University, Worcester, MA 01610*
- P20 Feeding Behavior of the Adult Barnacle *Balanus amphitrite* (Darwin) is Masked in the Absence of Water Flow.
McClary, M. *Bloomfield College, Bloomfield, N.J. 07003*
- P21 Olfaction, Extraoral and Oral Taste Senses Have Different Level of Stability in Fish Phylogeny.
Kasumyan, A.O. *Department of Ichthyology, Faculty of Biology, Moscow State University, Moscow, 119899 Russia*
- P22 Olfactory Responses to Amino Acids in Two Marine Teleosts, Red Sea Bream *Pagrus major* and Black Sea Bream *Acanthopagrus schlegeli* of Wild and Cultured Stocks
Mana, R.R., Anraku, K., and Kawamura, G. *Laboratory of Fish Ethology, Faculty of Fisheries, Kagoshima University, 4-50-20 Shimoarata, Kagoshima 890-0056. Japan*
- P23 Chemical Orientation of Brown Bullhead Catfish and Stonecats Under Different Flow Conditions.
Sherman, M. L., and Moore, P. A. *Laboratory for Sensory Ecology, Bowling Green, OH 43403*

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Olfactory System: Central Mechanisms

- P24 The Organization of Serotonin-immunoreactive Fibers in the Olfactory Nerve and in Glomerular Units of the Larval Sea Lamprey
Zielinski, B.S., and Hua, H.N. *Dept. of Biological Sciences University of Windsor, Windsor, Canada N9B 3P4*
- P25 Labeling of Olfactory Ensheathing Cells by the Lectin *Phaseolus vulgaris* (PHA-E).
Lipscomb, B.W., Treloar, H.B., and Greer, C.A. *Department of Neurosurgery and Section of Neurobiology, Yale University School of Medicine, New Haven, CT 06520-8039*
- P26 Recovery of Olfactory Bulb Laminar Volumes Following Olfactory Nerve Regeneration.
Karnik, S., Kanter, D., Kallwitz, E. and Meissami, E. *Department of Molecular & Integrative Physiology, University of Illinois, Urbana, IL 61801*
- P27 Neuronal Fate and Afferent Control of Proliferating Cells in the Olfactory Brain of Adult Decapod Crustaceans.
Hansen, A., and Schmidt, M. *Zoological Institute, University of Hamburg, D-20146 Hamburg, Germany.*
- P28 Possible Functions of Taurine in the Primary Olfactory Pathway.
Kratskin, I.¹, Belluzzi, O.², Smutzer, G.¹, Ross, D.³, and Hastings, L.¹ ¹*Smell and Taste Center, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA;* ²*Dipartimento di Scienze Biomediche, Sez. di Fisiologia, Università di Modena, 41100 Modena, Italy;* ³*Dept. of Otorhinolaryngology, University of Oklahoma Health Sci. Ctr., Oklahoma City, OK 73190, USA*
- P29 Subsets of LHRH-ir Cells in Bonnethead Shark *Nervus Terminalis* Ganglion May Differ in Cholinergic Function.
Moeller, J.F., and Meredith, M. *Program in Neuroscience, Florida State University, Tallahassee, FL 32306-0434*
- P30 Olfactory Receptor Neuronal Activity Determines Mitral Cell Dendritic Arbor During Development and Regeneration..
Puche, A.C.¹, Munger, S.D.², Reed, R.R.², Margolis, F.L.¹, and Shipley, M.T.¹ ¹*Dept. Anatomy and Neurobiology, Program in Neuroscience, University of Maryland, Baltimore, MD 21201;* ²*Howard Hughes Medical Institute, Dept. Molecular Biology and Genetics, Johns Hopkins Medical Institute, Baltimore, MD 21205.*

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- P31
44 Determination of mRNA for Low Voltage Activated Calcium Channels in the Developing Rat Olfactory Bulb.
Brown, C., Best, P., and Meisami, E. *Department of Molecular & Integrative Physiology, University of Illinois, Urbana, IL 61801*
- P32
45 Localization of Protein Kinases in Adult Mouse Olfactory Bulb.
Liu, N., Berlin, R.A., Chang, H. and Baker, H. *Cornell University Medical College at The Burke Medical Research Institute, White Plains, NY 10605*
- P33
46 Cloning and characterization of a cyclic nucleotide phosphodiesterase expressed in the olfactory system of *Manduca sexta*.
Stoker, M.B., Gibson, N.J., and Nighorn A. *ARL Division of Neurobiology, University of Arizona, Tucson, AZ 85721.*
- P34
47 Ultrastructure of Tyrosine Hydroxylase-Immunoreactive Neuronal Profiles in the Glomerular Layer of the Salamander Olfactory Bulb
Allen, D.M., and Hamilton, K.A. *Department of Cellular Biology and Anatomy, Louisiana State University Medical Center, Shreveport, LA 71130-3932*
- P35
48 Comparison of Immunoreactivity for the Gap Junction Protein Connexin43 in the Rat and Salamander Olfactory Bulbs
Hamilton, K.A. *Department of Cellular Biology and Anatomy, Louisiana State University Medical Center, Shreveport, LA 71130-3932*
- P36
49 Olfactory Bulb Granule Cells *In Vitro*: Anaxonic, GABAergic and Spinous
Gabeau, D., and Greer, C.A. *Dept. Neurosurg. & Sec. Neurobiol., Yale Univ. Sch. Med., New Haven, CT 06520-8039*
- P37
50 Mapping the Distribution of Ionotropic Glutamate Receptors in the Olfactory Bulb of Zebrafish using a Channel Permeant Probe, Agmatine (AGB).
Edwards, J.G., and Michel, W.C. *Department of Physiology, University of Utah School of Medicine, Salt Lake City, Utah, 84108*
- P38
51 Intracerebro-ventricular (icv) LHRH Injections Increase c-fos Expression in the Medial Preoptic Area of Male Hamsters Exposed to Female Pheromones.
Westberry, J. M., and Meredith, M. *Program in Neuroscience, Florida State University, Tallahassee FL 32306-4340*
- P39
52 Activation of an Anatomically Distinct Subpopulation of Neurons in the Male Mouse Accessory Olfactory Bulb (AOB) Following Exposure to Female Mouse Urine: Effect of Endocrine Status.
Dudley, C.A., Kumar, A., and Moss, R.L. *University of Texas Southwestern Medical Center, Dallas, Texas 75235*

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- P40
53 Functional Mapping of Urine-activated Glomeruli in the Main Olfactory Bulbs of Mice.
Schaefer, M. L., and Restrepo, D. *Program in Neuroscience and Department of Cellular and Structural Biology, University of Colorado Health Science Center, Denver, CO 80262*
- P41
54 Functional Mapping of the Developing Olfactory Bulb.
Guthrie, K.M., and Gall, C.M. *Dept. of Anatomy and Neurobiology, University of California, Irvine, CA 92697*
- P42
55 Con A Selectively Influences Neuronal Processing of Odor Stimuli in the Rat Olfactory Bulb.
Kirner, A., and Apfelbach, R. *University of Tübingen, Dept. of Animal Physiology, 72076 Tübingen, Germany*
- P43
56 Slice Blotting: a Simple Method for Visualizing Secretion Patterns in Living Brain Tissue.
Lowe, G. *Monell Chemical Senses Center, 3500 Market St, Philadelphia, PA 19104-3308.*
- P44
57 Dependence of Olfactory Bulb Activation on the Duration of Odor Exposure Revealed by fMRI
Yang, X.¹, Xu, F.^{1,2}, Renken, R.¹, Greer, C.A.^{2,3}, Shepherd, G.M.² and Shulman, R.G.¹¹*Department of Molecular Biology and Biophysics, Yale Univ., New Haven, CT 06520;*²*Section of Neurobiology, Medical School, Yale Univ., New Haven, CT 06520;*³*Department of Neurosurgery, Medical School, Yale Univ., New Haven, CT 06520.*
- P45
58 Modulation of Neuronal Activities in Olfactory Bulb Layers Studied by Functional Magnetic Resonance Imaging
Xu, F.^{1,2}, Yang, X.², Hyder, F.², Greer, C.A.^{1,3}, Shepherd, G.M.¹ and Shulman, R.G.²¹*Section of Neurobiology, Medical School, Yale Univ., New Haven, CT 06520;*²*Dept. of Molecular Biology and Biophysics, Yale Univ., New Haven, CT 06520;*³*Dept. of Neurosurgery, Medical School, Yale Univ., New Haven, CT 06520*

Thursday, April 15, 1999

Thursday Afternoon - 12:15 p.m. - 6:00 p.m.

- 12:15 p.m.-2:00 p.m. **Minority Luncheon (State Room)**
Organizer: J. Caprio
- 2:00 p.m. - 4:00 p.m. **Educational Outreach Workshop (Sarasota Room)**
Organizer: C. Byrd
- 2:00 p.m. - 4:00 p.m. **NIH Workshop (Florida Room)**
Organizers: D. Sklar, R. Small, and J. Finkelstein
- 4:00 p.m. - 6:00 p.m. **Transgenics Workshop (Sara Desoto Room)**
Organizer: R.F. Margolskee
- 59 **Dr. Robert F. Margolskee**
Introductory Comments
- 59 **Dr. Gwen Wong**
Department of CNS/CV Discovery Research, Schering Plough Research Institute, Kenilworth, NJ
"Transgenic Approaches to Study Taste: Targeting a Null Mutation in α -Gustducin and Directing Heterologous Gene Expression in Taste Cells with the Gustducin Promoter."
- 60 **Dr. Paul Feinstein**
The Rockefeller University, 1230 York Avenue, New York, NY 10021, email: feinstp@rockvax.rockefeller.edu
"Odorant Receptors Have Dual Roles."
- 60 **Dr. Barry Knox**
Biochemistry&Molecular Biology, State University of New York, Syracuse, NY
"Dissecting the Visual System using Transgenic and Transfected *Xenopus*"
- General Discussion
- 7:00 p.m. - 8:30 p.m. **Awards Symposium (Sara Desoto)**
Organizer: D.L. Hill
- 8:30 p.m. - 8:45 p.m. Refreshment Break

Thursday, April 15, 1999

SLIDES

Thursday Evening - 8:45 p.m. - 11:00 p.m.

The Chemical Ecology of Dominance, Sex, and Food
Chairperson: L. Clark

- 8:45 p.m. 61 Disruption of the Gene Encoding a Dyk2 Kinase Homologue Causes Olfactory Impairment in *Drosophila melanogaster*.
Fedorowicz, G.¹, Kulkarni, N.², Roote, J.³, Ashburner, M.³, Mackay, T.¹ and Anholt, R.²
¹*Department of Genetics, North Carolina State University, Raleigh, NC 27965*; ²*Department of Genetics, North Carolina State University, Raleigh, NC 27965*; ³*Department of Genetics, University of Cambridge, CB2 3EH, England*
- 9:00 p.m. 62 Specialization of Receptor Neurons to Naturally Produced Plant Odours
Mustaparta H., Røstelien T. , and Strandem M. *Department of Zoology, Norwegian University of Science and Technology, N-7034 Trondheim, Norway*
- 9:15 p.m. 63 Orientation In Complex Odor Landscapes: Spatial Arrangement Of Odor Sources Influences Crayfish Food-Finding Efficiency In Streams
Keller, T.A., Tomba, A.M., and Moore, P.A. *Laboratory for Sensory Ecology, Bowling Green State University, Bowling Green, OH 43403*
- 9:30 p.m. 64 Is Crayfish Dominance Communicated Through Recognition of Individuals or Dominance Status?
Zulandt, R.A.; Huber, R. , and Moore, P.A *Laboratory for Sensory Ecology, Department of Biological Sciences, Bowling Green State University, Bowling Green, OH 43403*

Assessment of Olfactory Function in Human

Chairperson: D.A. Leopold

- 9:45 p.m. 65 Olfactory and Trigeminal Event-Related Brain Potentials to Attended and Ignored Stimuli
Geisler, M.W.^{1,2}, Middleton, C.B.², Dalve-Endres, A.² and Murphy, C.^{1,2}
¹*University of California Medical Center, San Diego, CA*; ²*San Diego State University, Department of Psychology, San Diego, CA*
- 10:00 p.m. 66 Odorants Increase the Variance but not the Amplitude of fMRI Activation in the Ventral Temporal Lobe of the Human.
Sobel, N.¹, Prabhakaran, V.¹, Zhao, Z.², Desmond, J.E.², Glover, G.H.³, Sullivan, E.V.^{4,1}, and Gabrieli, J.D.E. ^{2,1} *Depts. of ¹Neuroscience, ²Psychology, ³Radiology, ⁴Psychiatry and Behavioral Science, Stanford University, Stanford, CA, 94305 USA*.

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10:15 p.m.

- 67 Olfactory Activity in the Human Cingulate Cortex Identified by FMRI .
Kettenmann, B.¹, Francis, S.T.², Bowtell, R.W.², McGlone, F.³, Renner, B.¹, Ahne, G.¹, Rolls, E.⁴ and Kobal G.¹
¹*Dept. of Experimental and Clinical Pharmacology and Toxicology, Univ. of Erlangen-Nuremberg, Erlangen, Germany;* ²*Magnetic Resonance Centre, School of Physics and Astronomy, Univ. of Nottingham, UK;* ³*Unilever Research, Port Sunlight Laboratory, Wirral, UK;* ⁴*Dept. of Experimental Psychology, Univ. of Oxford, Oxford, UK*

10:30 p.m.

- 68 Functional Mapping of Different Olfactory Functions in Humans
Savic, I.,^{1,2} Gulyas, B.,¹ Larsson, M.,³ and Roland, P.,¹
¹*Div of Human Brain Research, Dept Neuroscience,* ²*Dept of Neurology,* ³*Dept of Clinical Neuroscience and Family Medicine, Div of Geriatric Medicine, Karolinska Institute, Stockholm, Sweden*

10:45 p.m.

- 69 Olfactory Epithelial Morphology in Children with and without Rett Syndrome.
Leopold, D.A., Cai, X., Naidu, S.K., Yablanski, M.B., Loehrl, T. and Ronnett.
G.V. Johns Hopkins University School of Medicine

POSTERS

Thursday Evening - 7:00 p.m. - 11:00 p.m.

Chemisthesis: From Molecules to Behavior
Food Preference and Nutrition in Humans
Taste in the CNS

Chemisthesis: From Molecules to Behavior

- P1 70 Neurophysiological Differences Between Embryonic Rat Trigeminal and Geniculate Ganglion Cells in Culture.
Al-Hadlaq, S.¹, Bradley, R. M.,² MacCallum, D. K.³ and Mistretta, C. M.²
¹*Oral Health Sciences Ph.D. Program, Dentistry, University of Michigan, Ann Arbor, MI 48109;* ²*Biologic and Materials Sciences, School of Dentistry, University of Michigan, Ann Arbor, MI 48109;* ³*Anatomy and Cell Biology, Medical School, University of Michigan, Ann Arbor, MI 48109.*
- P2 71 Assessing Trigeminal-Based Repellents *In vitro*: Comparative Studies.
Savchenko, A¹, Bryant, B.¹, Mason, J.R.² and Clark, L.³
¹*Monell Chemical Senses Center, 3500 Market St., Philadelphia, PA 19104,* ²*USDA/ADC, Utah State University, Logan, UT, 84322,* ³*USDA National Wildlife Research Center, Fort Collins, CO 80521-2154*

- P3 72 Expression of an Acid Sensitive Ion Channel (ASIC) in Cultured Rat Trigeminal Neurons.
Huque, T.¹, Bryant B.P.¹, Mackler, S.A.^{2,3}
¹*Monell Chemical Senses Center, Philadelphia, PA 19104, University of Pennsylvania,* ²*Philadelphia, PA, 19104,* ³*Veterans Affairs Medical Center, Philadelphia, PA 19104*
- P4 73 The Effect of Specific n-Acetylcholine Receptor Blockers on Nasal Trigeminal Nerve Responses to R- and S-Nicotine in Rats
Renner, B.¹, Meindorfner, F.¹, Kaegler, M.², Thuerauf, N.³, Barocka, A.³ and Kobal, G.¹
¹*Institute of Experimental and Clinical Pharmacology and Toxicology, University of Erlangen-Nuremberg, D-91054 Erlangen, Germany;* ²*INBIFO Institut für biologische Forschung GmbH, D-51149 Cologne, Germany;* ³*Department of Psychiatry, University of Erlangen-Nuremberg, D-91054 Erlangen, Germany*
- P5 74 Role Of Neuronal Nicotinic Receptors In The Activation Of Neurons In Trigeminal Subnucleus Caudalis By Nicotine Delivered To The Oral Mucosa.
Carstens, E.¹, Simons, C.T.^{1,2}, Dessirier, J.-M.^{1,2}, Iodi-Carstens, M.¹, and Jinks, S.L.¹
¹*Section of Neurobiology, Physiology & Behavior, Univ. of California, Davis, CA 95616;* ²*Department of Food Science and Technology, Univ. of California, Davis CA 95616*
- P6 75 C-fos Expression in Trigeminal Nucleus Caudalis Neurons Evoked by Application of Carbonated Water to the Tongue Is Reduced by Blockers of Carbonic Anhydrase
Jinks, S.L.¹, Simons, C.T.^{1,2}, Dessirier, J.-M.^{1,2}, Iodi Carstens, M.¹, and Carstens, E.¹
¹*Section of Neurobiology, Physiology & Behavior, Univ. of California, Davis, CA 95616;* ²*Department of Food Science and Technology, Univ. of California, Davis CA 95616*
- P7 76 Responses of Neurons in Trigeminal Nucleus Caudalis to Intraoral Application of Carbonated Water Are Reduced by Dorzolamide, a Blocker of Carbonic Anhydrase
Simons, C.T.^{1,2}, Dessirier, J.-M.^{1,2}, and Carstens, E.¹
¹*Section of Neurobiology, Physiology & Behavior, Univ. of California, Davis, CA 95616;* ²*Department of Food Science & Technology, Univ. of California, Davis, CA 95616*
- P8 77 Oral Irritation by Carbonated Water Is Reduced by the Carbonic Anhydrase Inhibitors, Acetazolamide and Dorzolamide
Dessirier, J.-M.^{1,2}, Simons, C.T.^{1,2}, O=Mahony, M.² and Carstens, E.¹
¹*Section of Neurobiology, Physiology & Behavior; Univ. of California, Davis CA 95616;* ²*Dept. of Food Science & Technology, Univ. of California, Davis, CA 95616*

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- P9
78 Oral Irritation by Carbonated Water Is Reduced by Capsaicin Desensitization
O'Mahony, M.², Dessirier, J.-M.^{1,2,3}, Simons, C.T.^{1,2}, and Carstens, E.¹ ¹*Section of Neurobiology, Physiology & Behavior, Univ. of California, Davis, CA 95616;*
²*Dept. of Food Science & Technology, Univ. of California, Davis, CA 95616;* ³*Dept. Sciences Alimentaires, ENSIA, Massy, France*
- P10
79 The Effect of Capsaicin Desensitization on Differential Sensitivity for Sour Taste
Zuniga, J.R.¹, and Chen, N.² ¹*Department of Oral and Maxillofacial Surgery, Univ North Carolina, Chapel Hill, NC, USA 27599-7450;* ²*Department of Oral and Maxillofacial Surgery, Nanjing Medical University, Nanjing, P. R. China 210029*
- P11
80 Time Course of Capsaicin Burn to a Double-Step Input.
McBurney, D.H.¹, Balaban, C.D.², Affeltranger, M.¹, Deithorn, A¹, and Puskar, A.¹
¹*Department of Psychology, University of Pittsburgh, Pittsburgh, PA 15260;*
²*Departments of Otolaryngology and Neurobiology, University of Pittsburgh, Pittsburgh, PA 15261*
- P12
81 Effect of Long Term Exposure to Trigeminal Irritants Dalton, P. *Monell Chemical Senses Center, Philadelphia, PA 19104*
- P13
82 Structure - Activity Relationship of Analogs of Plant Unsaturated Alkylamides Mezine, I., and Bryant, B. *Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104*
- P14
83 Interactions of Tannins and Human Salivary Proteins Assessed by Turbidity Measurements.
Lawless, H. T.¹, Hartono, C.¹, Horne, J.¹ and Siebert, K.J.² ¹*Cornell University Department of Food Science, Ithaca, NY 14853;* ²*Cornell University, New York State Agricultural Experiment Station, Geneva, NY 14456*
- P15
84 The Effects of Gender, Allergic Rhinitis, and Test System on Perceptual Acuity to Nasal Irritants.
Shusterman, D., and Balmes, J. *University of California, San Francisco, CA 94143*
- P16
85 Objective Correlates of Nasal Irritation Caused by Exposure to Ethanol Vapor.
de Wijk, R.A., Jalowayski, A., Pilla-Caminha, G., and Cain, W.S. *Department of Surgery, and Department of Pediatrics, University of California, San Diego, CA.*
- P17
86 Predicting Everyday Responses from Psychophysical Data: Problems Encountered and a Solution Proposed.
Walker, J.C.^{1,2}, Polyakov, V.V.², Connell, V.L.¹, Barreto, A.D.³, Kendal-Reed, M.², Howell, M.A.¹, and Smith, C.J.^{1,3} ¹*R & D, R. J. Reynolds Tobacco Co., Winston-Salem, NC 27102;* ²*University of North Carolina School of Dentistry, Chapel Hill, NC 27599;* ³*Wake Forest University School of Medicine, Winston-Salem, NC 27103.*

- P18
87 Ocular Trigeminal Chemoreception: Comparison With Nasal Trigeminal Chemoreception and Development of a Quantitative Structure-Activity Relationship (QSAR).
Cometto-Muñiz, J.E.¹, Cain, W.S.¹, Abraham, M.H.² and Kumarsingh, R.²
¹*Chemosensory Perception Laboratory, Department of Surgery (Otolaryngology), University of California, San Diego, La Jolla, CA 92093-0957;* ²*Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK*
- P19
88 Measurement of Eye Redness From Exposure to Vapor.
Jalowayski, A. A., de Wijk, R. A. , and Cain, W. S. *Chemosensory Perception Laboratory, UCSD, La Jolla, CA 92093-0957*
- Food Preference and Nutrition in Humans**
- P20
89 Culture-Specific Chemosensory Drivers of Food Preference in Japan, Indonesia, Singapore and Australia.
Bell, G.A., and Song, H.J. *Centre for ChemoSensory Research, University of New South Wales, Australian Technology Park, Sydney, Australia, 1430.*
- P21
90 Genetic Taste Status Associates with Fat Food Acceptance and Body Mass Index in Adults
Duffy, V.B.^{1,2}, Fast, K.², Cohen, Z.², Chodos, E.², and Bartoshuk, L.M.² ¹*School of Allied Health, University of Connecticut, Storrs, CT 06269-2101;* ²*Department of Surgery, Yale School of Medicine, New Haven, CT 06520.*
- P22
91 Genetic Sensitivity to 6-n-propylthiouracil (PROP) Influences Food Preferences in Preschool Children. 22. Human Taste and Psychophysics
Keller, K.L., Steinmann L., Nurse R.J. and Tepper B.J. *Dept. of Food Science, Rutgers University, New Brunswick, NJ 08901*
- P23
92 Flavor Imprinting in Infants
Mennella, J.A., Khan, S.H., Garcia, P.L. and Beauchamp, G.K. *Monell Chemical Senses Center, Philadelphia, PA 19104-3308*
- P24
93 Strategies to Enhance Food Acceptance in Infants.
Gerrish, C.J., and Mennella, J.A. *Monell Chemical Senses Center, 3500 Market St., Philadelphia, PA 19104*
- P25
94 Cephalic Phase Hormonal Responses to High and Low Fat Foods in Women.
Crystal, S.R.¹, and Teff, K.L.¹ ¹*Monell Chemical Senses Center, 3500 Market St., Philadelphia, PA 19104;*

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Taste in the CNS

- P26 95 Characterization of the Chorda Tympani Nerve Terminal Field in the Rat Nucleus of the Solitary Tract with Anterograde Dil Transport.
Pittman, D. W.¹, and Contreras, R. J.¹ *Department of Psychology, The Florida State University, Tallahassee, FL 32306-1270*
- P27 96 Effects of Brief Pulses of Tastants on Neuronal Sensibilities in The Nucleus of the Solitary Tract.
Lemon, C.H., Di Lorenzo, P.M., and Reich, C.G. *Department of Psychology, Binghamton University, Binghamton, New York 13902-6000*
- P28 97 Salt Taste Discrimination by Rats Depends upon Differential Responses across Gustatory Neuron Types
St. John, S.J., and Smith, D.V. *Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201*
- P29 98 Gustatory Quality and Intensity Affect Fos Expression in the rNST.
Travers, S.P., Hauswirth, E.J., and Hanin, J. *College of Dentistry, The Ohio State University, Columbus, OH 43210*
- P30 99 Lithium Chloride-Induced Taste Aversion and c-Fos Expression in Area Postrema-Lesioned Rats.
Spencer, C.M.¹, Eckel, L.A.², Nardos, R.¹ and Houpt, T.A.^{1,1} *Dept. of Biological Science, Florida State University, Tallahassee, FL 32306; ²Bourne Laboratory, Dept. of Psychiatry, Weill Medical College of Cornell University, White Plains, NY 10605.*
- P31 100 The Influence of a Modified Salt Diet on Dendritic Remodeling in the Rostral Nucleus of the Solitary Tract (rNST) of the Rat
Liu, Y.-Z.¹, Schweitzer, L.², and Renehan, W.E.^{1,1} *Division of Gastroenterology, Henry Ford Health System, Case Western Reserve Univ., Detroit, MI; ²Department of Anatomical Sciences and Neurobiology, Univ. of Louisville, Louisville, KY*
- P32 101 Postnatal Development of Hyperpolarizing Inhibitory Post-Synaptic Potentials in the Rat Gustatory Nucleus of the Solitary Tract Studied in Vitro.
Grabauskas, G., and Bradley, R.M. *Dept. Biologic and Materials Sci., Sch. of Dentistry, Univ. Michigan, Ann Arbor, MI 48109-1078*

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- P33 102 Ultrastructural Localization of GABA During Postnatal Development in the Rat rNST.
Brown, M.E.¹, Renehan, W.E.², Langevin, E.¹ and Schweitzer, L.^{1,1} *Dept. of Anat. Sci. and Neurobiology, University of Louisville School of Medicine, Louisville, KY 40292; ²Henry Ford Hospital, Detroit, MI 48202*
- P34 103 Immunohistochemical Localization of GABA Receptors in the Developing rNST of the Rat.
Heck, W.L.¹, Renehan, W.E.², and Schweitzer, L.^{1,1} *Dept. of Anat. Sci. and Neurobiology, University of Louisville School of Medicine, Louisville, KY 40292; ²Henry Ford Hospital, Detroit, MI 48202*
- P35 104 Naltrexone Blocks Enkephalin-Induced Inhibition of Gustatory Responses in the Nucleus of the Solitary Tract
Li, C.-S., and Smith, D.V. *Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21021*
- P36 105 Individual Rostral NST Neurons Project to Both Parabrachial Nuclei in Rat.
Collins, C.D., Gill, C.F., Moore, W.D. and King, M.S. *Biology Department, Stetson University, DeLand, FL 32720*
- P37 106 Up-regulation of Fos in Orexin-A-Immunoreactive Neurons of the Hypothalamus after Taste Nerve Stimulation.
Harrison, T.A. *James H. Quillen College of Medicine, East Tennessee State University, Johnson City, TN*
- P38 107 Neuronal Correlates of Satiation
Small, D.^{1,2}, Zatoree, R.J.^{1,2}, Dagher, A.¹, Jones-Gotman, M.^{1,2,1} *McConnell Brain Imaging Center, and ²Neuropsychology Unit, Montreal Neurological Institute, McGill University, Quebec, Canada.*

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SLIDES

Friday Morning - 8:00 -9:30 a.m.

Cell Culture and the Development of Chemosensory Systems

Chairperson: T.E Finger

- 8:00 a.m. Generation of an Immortal Olfactory Receptor Neuron Cell Culture
108 Barber, R.D.^{1,2}, Jaworsky, D.E.¹, Yau, K.-W.^{1,2} and Ronnett G.V.^{1,3} ¹*Department of Neuroscience, ² Howard Hughes Medical Institute, ³ Department of Neurology, Johns Hopkins University School of Medicine, 725 N. Wolfe St., Baltimore, MD 21205*
- 8:15 a.m. Primary Olfactory Neuroepithelial Cultures Are GDNF Responsive.
109 Cunningham, A.M., and Doyle, K.L. *Sensory Neurobiology Group, Garvan Institute of Medical Research, 384 Victoria St, Darlinghurst, NSW 2010, AUSTRALIA*
- 8:30 a.m. Cloning and Characterizing NIP: A PDZ Domain-Containing Protein Interacts with the Cytoplasmic Domain of Neuropilin-1.
110 Reed, R.R.^{1,2,3}, and Cai, H^{1,2} ¹*Howard Hughes Medical Institutes, ²Department of Neuroscience and ³Department of Molecular Biology and Genetics, The Johns Hopkins University School of Medicine, Baltimore, MD 21205*
- 8:45 a.m. Convergent Ideas on Olfactory Organ Development in the Zebrafish *Danio rerio*.
111 Whitlock, K.E. *Section of Genetics and Development, Biotechnology Building, Cornell University, Ithaca, NY 14853*
- 9:00 a.m. Perturbation of Gastrulation Does Not Block Taste Bud Genesis.
112 Barlow, L.A. *Dept. of Biological Sciences, University of Denver, Denver CO 80208, and the Rocky Mountain Taste and Smell Center, UCHSC, Denver CO 80262.*
- 9:15 a.m. Neuropilin-1 Dependent Repulsion Guides Geniculate Axons Destined for Lingual Taste Buds.
113 Rochlin, M.W.¹, O'Connor, R.², Giger, R.J.³, Verhaagen, J.⁴, Tessier-Lavigne, M.² and Farbman, A.I. ¹*Neurobiology & Physiology, Northwestern Univ; Evanston, IL 60208; ²Anatomy, Univ Calif San Francisco & Howard Hughes Med Inst 94143-0452; ³Dept of Neuroscience, Johns Hopkins Univ School of Medicine, Baltimore, MD 21205; ⁴Netherlands Institute for Brain Research, Amsterdam, Netherlands*

9:30 am. – 9:45 a.m. Refreshment Break

9:45 a.m. - 10:45 a.m. Special Lecture (*Sara Desoto Room*)
Organizer: R.F. Margolskee

Dr. David Julius

Department of Cell Biology and Molecular Pharmacology, University of California, San Francisco, San Francisco, CA
"Peppers and Pain: Molecular Biology of Nociception"

General Discussion

THEMATIC SLIDE SESSION

Friday Morning - 10:45 a.m. - 12:00 p.m.

Trigeminal Chemoreception

Chair: S.A. Simon

- 10:45 a.m. Trigeminal Collaterals In The Olfactory Epithelium and Bulb: A Route For Direct Modulation Of Olfactory Information By Trigeminal Stimuli?
114 Finger, T.E.¹, Schaefer, M.^{1,2}, Böttger, B.¹ and Silver, W.L.³ ¹*Rocky Mountain Taste & Smell Ctr. and Dept. Cell. & Struct. Biology, Univ. Colorado Health Sci. Ctr., Denver CO 80262; ²Neuroscience Program, UCHSC, Denver CO 80262; ³Dept. Biology, Wake Forest Univ., Winston-Salem, NC 27109*
- 11:00 a.m. Activation of Trigeminal Neurons by Acid, Capsaicin, and Nicotine
115 Simon, S.A., and Liu, L. *Departments of Neurobiology and Anesthesiology, Duke University Medical Center, Durham, NC 27710*
- 11:15 a.m. Trigeminal Mechanisms of Oral Irritation
116 Carstens, E. *Section of Neurobiology, Physiology and Behavior, Univ. of California, Davis, CA 95616*
- 11:30 a.m. Responses to Irritation of the Nasal Mucosa Using Short- and Long-lasting Painful Stimuli.
117 Hummel, T. *Department of Otorhinolaryngology, University of Dresden, Fetscherstr. 74, 01307 Dresden, Germany*
- 11:45 a.m. Current Understanding of the Oral Sensory Effects of Capsaicin in Humans
118 Green, B.G.^{1,2} and Cruz, A.¹ ¹*The John B. Pierce Laboratory, 290 Congress Avenue, New Haven, CT 06519; ²Department of Surgery (Otolaryngology), Yale School of Medicine.*

Friday, April 16, 1999

POSTERS

Friday Morning - 8:00 a.m. - 12:00 p.m.

Peripheral Olfactory System: Biochemistry and Anatomy
Olfactory System: Central Pathways

Peripheral Olfactory System: Biochemistry and Anatomy

- P1 Comparison of Sonication and Calcium Shock Methods of Preparing Olfactory Cilia
119 Washburn, K.^{1,2}, Turner, T.², and Talaro, B.R.^{1,2} ¹Department of Neuroscience, Tufts University School of Medicine; Boston, MA 02111; ²Department of Physiology, Tufts University School of Medicine; Boston, MA 02111
- P2 Calcium-Activated Neutral Protease in Olfactory Tissues of the Catfish and Rat.
120 Kalinoski, D.L., Hilm, S., and Herman, S. Monell Chemical Sense Center, 3500 Market St., Philadelphia, PA 19104-3308
- P3 Localization of IP3 Receptor type1 and type 3, Olfactory Epithelium of Rat and Catfish.
121 Hilm, S., Rawson, N., and Kalinoski, D.L. Monell Chemical Senses Center, Philadelphia, PA 10104-3308.
- P4 Regulation of the Generation of cGMP in the Olfactory System of *Manduca sexta*
122 Nighorn, A.J., and Simpson, P.J. ARL Division of Neurobiology, The University of Arizona, Tucson, AZ, 85721
- P5 Kinases and Phosphorylation in Lobster Olfactory System.
123 Stoss, T.D., Xu, F., and McClintock, T.S. Department of Physiology, University of Kentucky, Lexington, KY 40536.
- P6 Functional Characterization of *Drosophila* Organs Involved in Olfaction and Pheromone Response. Park, S.-K.¹, Wang, Q.¹, Shanbhag, S.², Steinbrecht, A.², and Pikielny, C.W.^{1,1} ¹Dept. of Neuroscience and Cell Biol., Robert Wood Johnson Med. Sch./UMDNJ, 675 Hoes Lane, Piscataway NJ 08854, USA. pikelcl@umdnj.edu, http://www2.umdnj.edu/flylbweb/, ²Max-Planck-Institut fuer Verhaltensphysiologie, 82319, Seewiesen, Germany.
- P7 Annexin-i in the Rat Olfactory Epithelium.
125 Farbman, A.I., Buchholz, J.A., and Weiler, E. Department of Neurobiology & Physiology, Northwestern University, Evanston, IL 60208-3520, USA.

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- P8 Olfactory Marker Protein May Function as a Mitogen in Rat Olfactory Epithelium.
126 Ezeh, P.I., and Farbman, A.I. Department of Neurobiology & Physiology, Northwestern University, Evanston, IL 60208-3520 USA
- P9 Exposure-Induced Odor Sensitivity: Evidence for Peripheral Involvement.
127 Yee, K. K., and Wysocki, C. J. Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104-3308 USA
- P10 A Distinct Ubiquitin-positive Ultrastructural Array in the Supranuclear Region of Olfactory Epithelial Supporting Cells Following Extended Odor Exposure of Rats.
128 Carr, V.McM., Farbman, A.I., and Menco, B.Ph.M. Dept. of Neurobiology and Physiology, Northwestern University, Evanston, IL 60208
- P11 Increased HSP70(+)Olfactory Receptor Neuron (ORN) Density and Expansion of Bulbar Projections Following Methyl Bromide (MeBr) Lesion of Rat Olfactory Epithelium (OE).
129 Carr, V.McM.¹, Ring, G.², Youngentob, S.L.³, Schwob, J.E.², and Farbman, A.I.¹ ¹Dept. of Neurobiology and Physiology, Northwestern Univ., Evanston, IL 60208; ²Dept. of Anat. & Cell Biol. SUNY Health Science Center, Syracuse, NY 13214; ³Dept. of Physiology, SUNY Health Science Center, Syracuse, NY 13214
- P12 Feline Olfactory Anatomy.
130 Crenshaw, O.¹, Haskins, M.², Ulrich, P.¹ and Rawson, N.E.^{1,1} Monell Chemical Senses Center, 3500 Market St., Philadelphia, PA 19104; ²Dept. of Veterinary Medicine, University of Pennsylvania, Philadelphia PA 19104
- P13 Bowman's Glands and Nasal Mucous Contain Gonadotropin-Releasing Hormone.
131 Wirsig-Wiechmann, C.R.¹, and Matsumoto, H.² ¹Department of Cell Biology, University of Oklahoma, Oklahoma City, OK, 73104; ²Department of Biochemistry and Molecular Biology, University of Oklahoma, Oklahoma City, OK, 73104
- P14 Expression of Estrogen Receptor α (ER α) mRNA and Protein in the Olfactory Mucosa.
132 Fong, K.J., Robinson, A.M., Kern, R.C. and Pitovski, D.Z. Department of Otolaryngology Head and Neck Surgery, Northwestern University Medical School, Chicago, IL 60611
- P15 Does Estrogen Protect Olfactory Neurons From Apoptosis Through up Regulation of The Bcl 2 Proto Oncogene?
133 Robinson, A.M., Fong, K.J., Kern R.C., and Pitovski, D.Z. Dept. of Otolaryngology Head and Neck Surgery, Northwestern University School of Medicine, Chicago, IL 60611.

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- P16 Apoptotic death of olfactory neurons during different estrogen conditions
134 Pitovski, D.Z., Fong, K.J., Robinson, A.M. and Kern R.C. *Dept. of Otolaryngology Head and Neck Surgery, Northwestern University School of Medicine, Chicago, IL 60611*

- P17 The Olfactory Epithelium of the Zebrafish and the Giant Danio: Morphological and Proliferative Differences.
135 Poling, K.R., and Brunjes, P.C. *102 Gilmer Hall, University of Virginia, Charlottesville, VA 22903 U.S.A.*

- P18 Activity-dependent Labeling of the Olfactory Organ of Blue Crabs Suggests that Pheromone-sensitive and Food Odor-sensitive Receptor Neurons are Packaged Together in Aesthetasc Sensilla.
136 Cate, H.S.¹, Gleeson, R.A.², and Derby, C.D.¹ ¹*Department of Biology, Georgia State University, Atlanta, Georgia 30303;* ²*Whitney Laboratory, University of Florida, St. Augustine, Florida 32084*

- P19 Abnormal Growth in the Olfactory Epithelium Induced by a Parasitic Nematode
137 Weiler, E. *Northwestern University, 2153 North Campus Drive, Evanston, Illinois 60208, USA, emw884@nwu.edu*

Olfactory System: Central Pathways

- P20 A Portable Artificial Nose Based on Multiple Olfactory Principles.
138 Kauer, J. S.¹, Walt, D. R.², and White, J.¹ ¹*Dept. of Neuroscience, Tufts University School of Medicine, Boston, MA 02111;* ²*Dept. of Chemistry, Tufts University, Medford, MA*

- P21 Techniques for Quantifying Information in Olfactory Sensor Arrays.
139 Alkasab, T. K., Kauer, J. S., and White, J. *Dept. of Neuroscience, Tufts University School of Medicine, Boston, MA 02111*

- P22 Functional Expression of AMPA and Kainate Receptors in the Olfactory Bulb
140 Horning, M.S., and Trombley, P.Q. *Department of Biological Science, Florida State University, Tallahassee, FL 32306*

- P23 Presynaptic Inhibition of Primary Olfactory Afferents Mediated by Different Mechanisms in the Lobster and Turtle.
141 Wachowiak, M., and Cohen, L. B. *Dept. Mol. and Cell. Physiol., Yale University, New Haven, CT 06520; Marine Biological Laboratory, Woods Hole, MA 02546*

- P24 Spatio-Temporal Properties of Odor Elicited Responses in the Turtle Olfactory Bulb Measured with the Voltage-Sensitive Styryl Dye, RH414.
142 Lam, Y.-W., Cohen, L.B., Wachowiak, M. and Zochowski, M. *Dept. of Cellular and Molecular Physiology, Yale University School of Medicine, New Haven, CT 06520.*

- P25 Odor Plume Structure and Dynamics: Electrophysiological Measurement and Central Processing.
143 Vickers, N.J.^{1,2}, Christensen, T.A.², Baker, T.C.³ and Hildebrand, J.G.²
¹*Department of Biology, University of Utah, Salt Lake City, UT 84112;* ²*ARL, Division of Neurobiology, University of Arizona, Tucson, AZ 85721;* ³*Department of Entomology, Iowa State University, Ames, IA 50011*

- P26 Contextual Influences on the Central Processing of Chemical Signals by Ensembles of Olfactory Interneurons in the Moth Antennal Lobe.
144 Christensen, T.A., and Hildebrand, J.G. *Arizona Research Labs Division of Neurobiology, University of Arizona, PO Box 210077, Tucson, AZ 85721-0077*

- P27 Number and Timing of Spikes as Measures of Mitral/tufted Cell Response Strength.
145 Dorries, K.M., and Kauer, J.S. *Department of Neuroscience, Tufts University School of Medicine, Boston, MA 02111.*

- P28 Goldfish Olfactory Bulb Relay Neurons Demonstrate a Great Variety of Response Characteristics During Epithelial Cross-adaptation Experiments with Various Pheromones.
146 Lüthje, L.G., and Zippel, H.P. *Physiol. Inst. der Universität, Humboldtallee 23, 37073 Göttingen, Germany*

- P29 Goldfish Olfactory Bulb Relay Neurons Demonstrate a Great Variety of Response Characteristics During Epithelial Cross-adaptation Experiments with Amino Acids.
147 Zippel, H.P., and Willms, H.-G. *Physiol. Inst. der Universität, Humboldtallee 23, 37073 Göttingen, Germany*

- P30 Electrophysiology of identified mitral and tufted cells in the main olfactory bulb (MOB).
148 Heyward, P.M., Tian, Y., and Shipley M.T. *Department of Anatomy and Neurobiology, University of Maryland, Baltimore.*

- P31 Multiple Effects of Zinc and Copper on Neuronal Excitability
149 Trombley, P.Q., Horning, M.S., and Blakemore, L.J. *Department of Biological Science, Florida State University, Tallahassee, FL 32306*

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- P32 Excitatory Interaction Among Olfactory Bulb Mitral Cells in the Absence of Synapses
150 Zhou, F.-M., Ennis, M., Davis, B. and Shipley, M. *Department of Anatomy and Neurobiology, University of Maryland at Baltimore, Baltimore, MD 21201;*
- P33 NMDA Receptor-Dependent, Recurrent and Neighboring Excitation of Mitral Cell Dendrites in the Rat Olfactory Bulb.
151 Aroniadou-Anderjaska, V., Ennis, M., and Shipley, M. T. *Department of Anatomy and Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD, 21201.*
- P34 Some Periglomerular Cells of the Rat Accessory Olfactory Bulb May Be Excited by Gaba.
152 Goldmakher, G.V., and Moss, R.L. *UT Southwestern Medical Center, Dallas, TX 75235*
- P35 Calcium Influx Through NMDA Receptors Directly Triggers Neurotransmitter Release at Olfactory Dendrodendritic Reciprocal Synapses.
153 Chen, W.R., and Shepherd, G.M. *Yale University Section of Neurobiology, 333 Cedar Street, C303 SHM, New Haven, CT 06510.*
- P36 Group I Metabotropic Glutamate Receptors (mGluRs) Modulate Transmission from Mitral/Tufted (M/T) to Granule Cells *in Vitro*.
154 Ciombor, K.J., Aroniadou-Anderjaska, V., Shipley, M.T. and Ennis, M. *Department of Anatomy and Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201*
- P37 Group II Metabotropic Glutamate Receptor Reduces Synaptic Transmission from Mitral to Granule Cells in the Rat Accessory Olfactory Bulb (AOB).
155 Jia, C., Chen, W., Ma, M. and Shepherd, G.M. *Section of Neurobiology, Yale Medical School, New Haven, CT 06510*
- P38 Long Term Potentiation (LTP) in the Rat Accessory Olfactory Bulb.
156 Jia, C., Ma, M., Chen, W. and Shepherd, G.M. *Section of Neurobiology, Yale Medical School, New Haven, CT 06510*
- P39 Increase in Network Excitability Following High Frequency Stimulation of Association Fibers in Piriform Cortex.
157 Stripling, J. S., and Cauthron, J. L. *Department of Psychology, University of Arkansas, Fayetteville, AR 72701.*

- P40 Cortical Mechanisms of Olfactory Coding: Adaptation and Cross-adaptation to Odorants Presented Singly and in Mixtures.
158 Wilson, D.A. *Department of Zoology, University of Oklahoma, Norman, OK 73019*
- P41 Reduced Habituation is Achieved with a Five Minute Inter-Stimulus Interval in the Olfactory Event-Related Potential
159 Wetter, S.^{1,2}, Geisler, M.W.^{1,2}, and Murphy, C.^{1,2} ¹*SDSU Department of Psychology, 6363 Alvarado Ct., Ste. 101, San Diego, CA 92120-4913;* ²*UC San Diego Medical Center, San Diego, CA 92103.*
- P42 Sensitization of the Human EEG During Chemical Exposure.
160 Fernandez, M.^{1,2}, Bell, I. R.^{1,2}, and Schwartz, G. E. R.¹ ¹*Department of Psychology, The University of Arizona, Tucson, AZ 85721;* ²*Veterans Affairs Medical Center, Tucson, AZ 85723*
- P43 Response Profiles of Midbrain and Forebrain Neurons in the Central Olfactory Pathway of the American Lobster, *Homarus americanus*.
161 Mellon, D.F.^{1,2}, and Atema, J.² ¹*University of Virginia, Department of Biology, Charlottesville VA 22903;* ²*Boston University Marine Program, Marine Biological Laboratory, Woods Hole MA 02543*

Friday Afternoon - 12:00 p.m. - 7:00 p.m.

- | | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12:00 p.m. - 1:30 p.m. | Business Meeting (Sara Desoto Room) |
| 1:30 p.m. - 3:30 p.m. | Careers Panel (Sara Desoto Room)
<i>Organizer: G.D. Burd</i>
Participants: J. Finkelstein, Program Officer, NIH-National Institute on Aging; A. Gilbert, CEO, Synthetics Inc.; D. Ming, Research Scientist, Monsanto; M. Roshold, Instructor, Culinary Institute; P. Scott-Johnson, Faculty Member, Spelman College; V. (Kit) Streusand Goldman, Staff Scientist and Project Leader, Gillette Research Institute. |
| 3:30 p.m. - 5:30 p.m. | Smell vs. Taste Softball Game
<i>Organizer: J. Caprio</i> |
| 5:30 p.m. - 7:00 p.m. | Industrial Reception (Florida Room)
<i>Organizer: G. DuBois</i> |

Friday, April 16, 1999

Friday, April 16, 1999

SLIDES

Friday Evening - 7:00 p.m. - 8:30 p.m.

Central Olfactory Pathways

Chairperson: P. Brunjes

- 7:00 p.m. 162 The Macrolglomerular Complex in Two Related Species of Moths: Specified Subdivision According to Input Information.
Berg, B.G., Almaas, T.J., and Mustaparta, H. *Department of Zoology, Norwegian University of Science and Technology, N-7034 Trondheim, Norway*
- 7:15 p.m. 163 Developmental and Activity-dependent Cell Death in the Rat Olfactory Bulb.
Fiske, B.K.¹, Norman, C.C.², and Brunjes, P.C.^{1,2} ¹*Neuroscience Graduate Program, University of Virginia, Charlottesville, VA 22903;* ²*Department of Psychology, University of Virginia, Charlottesville, VA 22903*
- 7:30 p.m. 164 Pheromone-Sensitive Mitral Cells in the Goldfish Respond to More than One Odotope.
Hanson, L.R.¹, Caprio, J.², and Sorensen, P.W.¹ ¹*University of Minnesota, St. Paul, MN 55108;* ²*Louisiana State University, Baton Rouge, LA 70803.*
- 7:45 p.m. 165 Heterogeneity of IPSCs in Mouse Olfactory Bulb Granule Cells
Nusser, Z., and Mody, I. *Depts. of Neurology and Physiology, UCLA School of Medicine, Los Angeles, CA-90095, USA*
- 8:00 p.m. 166 Neural Substrates for Sex and Individual Recognition by Odors in Female Golden Hamsters.
Johnston, R.E., and Petrusis, A. *Dept. of Psychology, Cornell University, Ithaca, NY*
- 8:15 p.m. 167 Organization of the Ophidian Amygdala: Chemosensory Pathways to the Hypothalamus.
Martínez-Marcos, A.¹, Lanuza, E.², and Halpern, M.¹ ¹*Dept. of Anatomy and Cell Biology, HSCB, SUNY, Brooklyn, NY11203;* ²*Dept. de Biología Animal, Universitat de València, 46100 Burjassot, València, Spain.*

8:30 p.m. -- 8:45 p.m. **Refreshment Break**

8:45 p.m. -10:30 p.m.

Presidential Symposium

Organizer: C. A. Greer

- 168 **Dr. Charles A. Greer**
Department of Neurosurgery and Section of Neurobiology, Yale University School of Medicine, New Haven, CT 06520-8039
"Olfactory Glomeruli: Intrinsic Organization"
- 169 **Dr. Peter Mombaerts**
The Rockefeller University, New York, NY 10021-6399
"Targeting Olfaction"
- 170 **Dr. Peter C. Brunjes**
Department of Psychology, University of Virginia, Charlottesville, VA 22903
"Afferent Influences on Glomerular Development"
- 171 **Dr. Michael T. Shipley**
Department of Anatomy & Neurobiology, Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201
"Integrative Properties of Olfactory Bulb Neurons"
- 172 **Dr. Kensaku Mori**
Laboratory for Neuronal Recognition Molecules; Brain Science Institute RIKEN, Wako, Saitama 351-0198, Japan
"Functional Meaning Of Glomerular Units And Their Spatial Arrangement In The Mammalian Olfactory Bulb"

Friday, April 16, 1999

POSTERS

Friday Evening - 7:00 p.m. - 11:00 p.m.

Taste Receptor Cell and Peripheral Nerve Function I
Development of Chemosensory Systems
Olfactory Sensory Neurons - Physiology

Taste Receptor Cell and Peripheral Nerve Function I

- P1 Chronic Recordings from the Rat Chorda Tympani Nerve.
173 Bradley, R.M., and Grabauskiene, S. *Dept. Biological and Materials Sciences, School of Dentistry, University of Michigan, Ann Arbor, MI 48109.*
- P2 Chemical, Thermal, and Pharmacological Sensitivities of Lingual Geniculate Ganglion Neurons in Rats.
174 Lundy Jr., R.F. ^{1,2}, and Contreras, R.J. ^{1,1} *Department of Psychology, Florida State University, Tallahassee, FL 32304-1072; ²Department of Behavioral Science, Penn State College of Medicine, Hershey, PA. 17033-H181.*
- P3 Salt-evoked Lingual Surface Potentials in Humans.
175 Mogyorósi, A. ^{1,3}, Heck, G.L. ², Lyall, V. ^{2,3}, DeSimone, J.A. ², and Feldman, G.M. ^{1,3}
¹ *Department of Medicine, VCU/Medical College of Virginia, Richmond, VA 23298; ²Department of Physiology, VCU/Medical College of Virginia, Richmond, VA 23298; ³Hunter Holmes McGuire VAMC, Richmond, VA 23249*
- P4 Rate Coding in Hamster Taste Buds?
176 Varkevisser, B.A. ^{1,3}, Peterson, D.A. ², Ogura, T. ^{1,3}, Anderson, C.W. ², and Kinnaman, S.C. ^{1,3} *Dept. of Anatomy and Neurobiology, ²Dept. of Computer Science, Colorado State University, Ft. Collins, CO, 80523; ³Rocky Mountain Taste and Smell Center, Denver, CO 80262*
- P5 The Water Response in Taste Cells: Expression of Aquaporin-1 and -2 and the Effects of Osmotic Changes on Voltage-activated Currents in Mammalian Taste Cells
177 Gilbertson, T. A., Kim, I., Siears, N. L., Zhang, H., and Liu, L. *Pennington Biomedical Research Center, LSU, Baton Rouge, LA 70808*
- P6 Multiple Sensitivity of Rat Fungiform Taste Cells: Whole Cell Responses to Apical Chemical Stimulation
178 Gilbertson, T.A. ¹, Zhang, H. ¹, Boughter, J.D., Jr. ² and Smith, D.V. ² *Pennington Biomedical Research Center, Louisiana State University, Baton Rouge, LA 70808; ²Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201*

Friday, April 16, 1999

- P7 Effects of External Osmolarity on Taste Receptor Cell (TRC) Volume and Intracellular pH (pH_i).
179 Lyall, V. ¹, Heck, G.L. ¹, DeSimone, J.A. ¹ and Feldman, G.M. ^{1,2} *Department of Physiology, Virginia Commonwealth University, Richmond, VA 23298; ²Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA 23249.*
- P8 Genetic Dissection of Biotin and Acetate Induced Membrane Currents in Paramecium Chemoresponse.
180 Bell, W.E. ^{1,4}, Preston, R.R. ², Yano, J. ¹, Fiekens, J.F. ³, and Van Houten, J.L. ¹
¹ *Department of Biology, University of Vermont, Burlington, VT 05405;*
² *Department of Physiology, Allegheny University of the Health Sciences, Philadelphia, PA 19129; ³Department of Anatomy and Neurobiology, University of Vermont, Burlington, VT 05405; ⁴Department of Biology, Virginia Military Institute, Lexington, VA 24450*
- P9 Proton-Activated Currents in Taste Cells of Rat Vallate Papilla.
181 Lin, W. ^{1,2}, and Kinnamon, S. C. ^{1,2} *Colorado State University, Fort Collins, CO 80523; ²Rocky Mountain Taste and Smell Center, University of Colorado Health Center, Denver, Co 80262.*
- P10 Additive Effects of Fatty Acids and Denatonium or Saccharin in Isolated Taste Receptor Cells
182 Boughter, Jr., J.D. ¹, Christy, R.C. ¹, Smith, D.V. ¹ and Gilbertson, T.A. ² *Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201; ² Pennington Biomedical Research Center, Louisiana State University, Baton Rouge, LA 70808*
- P11 Effects of Zinc and other Metal Ions on Delayed Rectifying K⁺ Channels in Rat Taste Cells.
183 Schilacci, J. T., and Gilbertson, T.A. *Pennington Biomedical Research Center, LSU, Baton Rouge, LA 70808*
- P12 The Role of Delayed Rectifying K⁺ Channels in Chemosensory Fat Signaling in the Gut
184 Kim, I., Keller, B., Liu, L., Liou, S., York, D. A. and Gilbertson, T. A. *Pennington Biomedical Research Center, LSU, Baton Rouge, LA 70808*

Friday, April 16, 1999

Development of Chemosensory Systems

- P13 185 Sequential Activation of Basic Helix Loop Helix and Repeat Helix Loop Helix Transcription Factors During Olfactory Placode Development.
Burns, C.J.¹, Pozzoli, O.², Consalez, G.², and Vetter, M.L.¹¹*Department of Neurobiology and Anatomy, University of Utah, Salt Lake City, Utah 84132;*²*Department of Biological and Technological Research (DIBIT) San Raffaele Scientific Institute (HSR), Via Olgettina 58, 20132 Milano, Italy*
- P14 186 TGF- α Overexpression Modulates Terminal Differentiation of Olfactory Receptor Neurons: Involvement of TGF- β Receptors.
Getchell, T.V.^{1,2}, Boggess, M.A.³, and Getchell, M.L.^{2,3}¹*Department of Physiology, Sanders-Brown Center on Aging;* ³*Division of Otolaryngology/Head & Neck Surgery, Department of Surgery, University of Kentucky College of Medicine, Lexington, KY 40536.*
- P15 187 Expression of Biotransformation Enzymes in Human Fetal Olfactory Mucosa.
Gu, J.¹, Su, T.^{1,2}, Chen, Y.¹, Zhang, Q.-Y.¹, and Ding, X.^{1,2}¹*Wadsworth Center, New York State Department of Health, Albany, NY 12201;*²*School of Public Health, State University of New York at Albany, NY 12201*
- P16 188 Sonic Hedgehog Signaling in Rodent Tongue Cultures.
Hall, J.M.¹, Finger, T.E.¹, MacCallum, D.K.² and Mistretta, C.M.³¹*Rocky Mountain Taste and Smell Center and Department of Cellular and Structural Biology, University of Colorado Health Sciences Center, Denver, CO 80262;*²*Anatomy and Cell Biology, Medical School, University of Michigan, Ann Arbor, MI 48109;*³*Biologic and Materials Sciences, School of Dentistry, University of Michigan, Ann Arbor, MI 48109.*
- P17 189 BDNF and NT-3 mRNA Expression Patterns in the Developing and Adult Human Tongue.
Nosrat, I. V.¹, Seiger, ², and Nosrat, C. A.¹¹*Department of Neuroscience, Karolinska Institutet, S-171 77, Stockholm, Sweden;*²*Department of Clinical Neuroscience and Family Medicine, Karolinska Institute, S- 141 86, Huddinge, Sweden*
- P18 190 Development of Extra-Oral Taste Buds in the Rat.
Popovska, Z., Jain, S., and Sweazey, R.D.¹*Department of Anatomy, Indiana University School of Medicine, Fort Wayne, IN 46805*
- P19 191 Nitric Oxide May Play a Signaling Role in Olfactory Development in *Manduca sexta*
Nighorn, A., Gibson, N.J., Rössler, W., Hildebrand, J.G., and Tolbert, L.P.¹*ARL Division of Neurobiology, University of Arizona, Tucson, AZ 85721.*

Friday, April 16, 1999

- P20 192 A Novel Gene, Olfactoregulin, Implicated in Axon Guidance, Synapse Formation, and Regeneration in the Rat Olfactory Bulb.
Otaki, J.M., and Firestein, S.¹*Department of Biological Sciences, Columbia University, New York, NY 10027.*
- P21 193 Neuromodulation of Kv1.3 by Insulin Receptor Kinase in the Olfactory Bulb During Sensory Deprivation.
Tucker, K., Simmen, J.A., and Fadol, D.A.¹*Zoology Department, College of Science and Mathematics, Auburn University, Auburn, AL 36849*
- P22 194 Focal Denervation Alters Olfactory Bulb Development
Couper Leo, J.M.¹, and Brunjes, P.C.²¹*Program in Neuroscience, University of Virginia, Charlottesville, Virginia, 22903;*²*Department of Psychology, University of Virginia, Charlottesville, Virginia, 22903*
- P23 195 Sonic Hedgehog Expression In The Glomeruli During Rat Olfactory System Development
Gong, Q., and Farbman, A. I.¹*Dept. of Neurobiology and Physiology, Northwestern University, Evanston, IL 60208.*
- Olfactory Sensory Neurons - Physiology**
- P24 196 Phosphodiesterases and Calcium Signaling in Mouse Olfactory Receptor Neurons
Liu, G., and Talamo, B.¹*Department of Neuroscience, Tufts University School of Medicine, 136 Harrison Ave, Boston, MA 02111.*
- P25 197 Intracellular Ca²⁺ Stores Control the Waveform of Odor-Induced Ca²⁺ Transients in the Dendrite and Soma but not in the Cilia of Olfactory Receptor Neurons.
Zufall, F.¹, Leinders-Zufall, T.¹, Shepherd, G.M.², Greer, C.A.², and ¹*Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD 21201;*²*Section of Neurobiology, Yale University School of Medicine, New Haven, CT 06510*
- P26 198 Odor-elicited Intracellular Calcium Changes in Cultured Human Olfactory Cells.
Gomez, G.¹, Restrepo, D.², and Rawson, N.E.¹¹*Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104;*²*University of Colorado Health Sciences Center, Denver, CO 80262*
- P27 199 Both External and Internal Calcium Reduce the Sensitivity of the Olfactory Cyclic-Nucleotide-Gated Channel to cAMP
Kleene, S.J.¹*Department of Cell Biology, Neurobiology, and Anatomy, University of Cincinnati, Cincinnati, OH 45267-0521*

P28 200	Electrical Communication Among Olfactory Receptor Neurons by Peripheral Waves. Parker, J.M. ¹ , Lindemann, B. ² , and Caprio, J. ¹ ¹ <i>Department of Biological Sciences, Louisiana State University, Baton Rouge, LA. 70803; </i> ² <i>Department of Physiology, Saar University, D-66421 Homburg, Germany.</i>	P36 208	Electrophysiology of OMP-Null ORNs and Rescue with an OMP-IRES-GFP Adenovirus. Ivic, L. ¹ , Pyrski, M. ² , Richards, L. ² , Firestein, S. ¹ , and Margolis, F.L. ² ¹ <i>Columbia University, Dept. Biol. Sci., New York, NY 10027; </i> ² <i>University of Maryland, School of Medicine, Dept. Anat. and Neurobiol., Baltimore, MD 21201</i>
P29 201	Expression of mRNA Encoding for Gap Junctional Proteins in Mouse Olfactory Epithelium. Zhang, C., and Restrepo, D. <i>Department of Cellular and Structural Biology, University of Colorado Health Sciences Center, Denver, CO 80262</i>	P37 209	Biophysical Properties of Feline Olfactory Receptor Neurons. Lischka, F. ¹ , Gomez, G. ¹ , Haskins, M. ² and Rawson, N.E. ¹ ¹ <i>Monell Chemical Senses Center, Philadelphia PA 19104; </i> ² <i>Dept. of Veterinary Medicine, University of Pennsylvania, Philadelphia PA 19104</i>
P30 202	Effect of Inhibitors on Cyclic Nucleotide and Nitric Oxide Activated Potassium Fluxes in the Olfactory Nerve of the Garfish, <i>Lepisosteus platostomus</i> . Kracke, G.R., Krambeck, A. , and Speichinger, E.D. <i>Dept. of Anesthesiology, University of Missouri, Columbia, MO 65212</i>	P38 210	Pheromone-Sensitive Olfactory Receptor Neurons in the Moth <i>Manduca sexta</i> : Circadian Changes in the Spontaneous Activity and Adaptation of the Olfactory Response. Bittmann, K. ¹ , Dolzer, J. ^{1,2} , and Stengl, M. ^{1,2} ¹ <i>University of Regensburg, Biology I, Dept. of Zoology, 93040 Regensburg, Germany; </i> ² <i>University of Marburg, Biology, Animal Physiology, 35032 Marburg, Germany</i>
P31 203	Effect of Protein Phosphorylation on the Hyperpolarization-activated Current, I_h , in Rat Olfactory Receptor Neurons. Vargas, G., and Lucero, M. T. <i>University of Utah, Department of Physiology, Salt Lake City, UT 84108</i>	P39 211	Odor-evoked, Chloride-mediated Conductance in Lobster Olfactory Receptor Neurons. Doolin, R.E., and Ache, B.W. <i>The Whitney Lab 9505 Ocean Shore Blvd, St. Augustine, FL 32086</i>
P32 204	Reversible Disruption of Odor Transduction by Adenylyl Cyclase Inhibitors. Chen, S., Leinders-Zufall, T., and Zufall, F. <i>Department of Anatomy and Neurobiology, University of Maryland School of Medicine, Baltimore, MD 21201</i>	P40 212	Regulation of a Na^+ -gated nonselective cation channel by PI(4,5)P ₂ and PI(4)P Zhainazarov, A.B. ¹ , and Ache, B.W. ^{1,2} ¹ <i>Whitney Laboratory, University of Florida, St. Augustine, FL 32086; </i> ² <i>Departments of Zoology and Neuroscience, University of Florida, Gainesville, FL 32610</i>
P33 205	Nitric Oxide Activates an Outward Current in Olfactory Receptor Neurons from <i>C. caudiverbera</i> and <i>X. laevis</i> . Schmachtenberg, O., and Bacigalupo, J. <i>Departamento de Biología, Facultad de Ciencias, Universidad de Chile, Santiago, Chile</i>	P41 213	An Electrogenic $\text{Na}^+/\text{Ca}^{2+}$ Exchanger in Squid Olfactory Neurons. Danaceau, J.P., and Lucero, M.T. <i>University of Utah Department of Physiology, Salt Lake City, UT.</i>
P34 206	Odor Suppression of V-gated Currents Contributes to the Net Odor-induced Response in Vertebrate Isolated Olfactory Neurons Sanhueza, M., and Bacigalupo, J. <i>Departamento de Biología, Facultad de Ciencias, Universidad de Chile, Santiago, Chile</i>	P42 214	Sustaining Olfaction at Low Salinities: Evidence for a Dynamically Maintained Ionic Microenvironment Associated with the Olfactory Sensilla (Aesthetascs) of the Blue Crab, <i>Callinectes sapidus</i> . Gleeson, R.A. ¹ , Hammar, K. ² , and Smith, P.J.S. ² ¹ <i>The Whitney Laboratory, University of Florida, St. Augustine, FL 32086; </i> ² <i>The BioCurrents Research Center, Marine Biological Laboratory, Woods Hole, MA 02543</i>
P35 207	Mixture Suppression and Odor Suppression of cAMP-induced Current in Olfactory Receptor Neurons. Yamada, H., and Nakatani, K. <i>Institute of Biological Sciences, University of Tsukuba, Tsukuba, Ibaraki, 305-8572, Japan</i>	P43 215	Survey of Ionic Channels in Identified Chemosensory Neurons of the Nematode <i>Caenorhabditis elegans</i> Nickell, W.T. ¹ , Pun, R.Y.K. ² , and Kleene, S.J. ¹ ¹ <i>Department of Cell Biology, Neurobiology, and Anatomy, </i> ² <i>Department of Molecular and Cellular Physiology, University of Cincinnati, Cincinnati, OH 45267</i>

ACHEMS 1999 - QUICK REFERENCE

TIME	WEDNESDAY		THURSDAY		FRIDAY		SATURDAY		SUNDAY		TIME
8:00											8:00
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12:00	Executive Committee Meeting	Satellite Symposia									12:00
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6:00	Registration (Long Boat)	Minority (State Rm.)									6:00
6:30											6:30
7:00	Opening Buffet (Sara Desoto)	Awards Symposium Org: D.L. Hill (Sara Desoto)									7:00
7:30											7:30
8:00	Welcome & Awards (Hernando Desoto)										8:00
8:30	Givaudan-Roure Lecture Dr. A.J. Hudspeth (Hernando Desoto)	Break									8:30
9:00											9:00
9:30	Cash Bar Social (Gallery)	Student Travel Mtg. (Hernando Desoto)									9:30
10:00											10:00
10:30											10:30

Slides: Olfactory/Vomeronasal Epithelium Chair: S. Firestein	Posters: Feeding and Reproductive Behavior I	Slides: Cell Culture and Dev Of Chemo Systems Chair: T.E. Finger	Posters: Peripheral Olfactory System: Biochemistry and Anatomy	Slides: Human Olfactory Perception Chair: P. Dalton	Posters: Taste Receptor Cell and Peripheral Nerve Function II	Slides: Oral Perception in Humans Chair: B. Cowart	Posters: Feeding and Reproductive Behavior II	8:00
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Business Meeting
(Sara Desoto Room)Careers Panel
Org: G.D. Burd
(Sara Desoto Room)Smell vs. Taste Softball Game
Organizer: J. Caprio

Beach Time!

Beer Tasting
Org: J. Kinnamon
(Florida Room)Industrial Reception
Org: G. DuBois
(Florida Room)Human Olfactory Perception
Chair: J. GlendinningHuman Taste Perception
Chair: S. Travers

Clinical Studies

Posters: Chemesthesia: from Molecule to Behavior

Posters: Food Preference and Nutrition in Humans

Posters: Taste in the CNS

Posters: Taste Receptor Cell and Peripheral Nerve Function II

Posters: Development of Chemosensory Systems

Posters: Olfactory Sensory Neurons: Physiology

Transgenics Workshop
Org: R.F. Margolskee
(Sara Desoto Room)Awards Symposium
Org: D.L. Hill
(Sara Desoto)

Posters: Olfactory Pathways

Posters: Presidential Symposium
Chair: C.A. Greene

Posters: Development of Chemosensory Systems

Posters: Central Olfactory Pathways
Chair: P. Brunjes

Posters: Olfactory Sensory Neurons: Physiology

Posters: Development of Chemosensory Systems

Posters: Mechanisms of Taste
Chair: J. GlendinningPosters: Tactile Receptors
Dr. C. Zuker & Dr. N. RybaPosters: Localization of Gustatory Function in the CNS
Chair: S. TraversPosters: Human Olfactory Perception
Chair: B. CowartPosters: Human Taste Perception
Chair: S. Travers

Posters: Clinical Studies

Saturday, April 17, 1999

Saturday, April 17, 1999

- P44
216 Functional Mapping of Olfactory Receptor Cells within Aesthetasc Sensilla of the Spiny Lobster.
Steullet, P.¹, Cate, H.S.¹, Ngo, V.¹, Michel, W.C.², and Derby, C.D.¹ ¹Department of Biology, Georgia State University, Atlanta, GA 30303 USA; ²Department of Physiology, University of Utah Medical School, Salt Lake City, UT
- P45
217 Olfactory Responses to Hostplant Volatiles Recorded from Sensory Cells of Long Trichoid Sensilla on the Antennae of the Female Sphinx Moth *Manduca sexta*.
Shields, V.D.C., and Hildebrand, J.G. ARL Division of Neurobiology, University of Arizona, Tucson, AZ 85721, USA

Saturday, April 17, 1999

SLIDES

Saturday Morning - 8:00 a.m. - 10:00 a.m.

Human Olfactory Perception

Chairperson: P. Dalton

- 8:00 a.m.
218 A Comparison of GC Olfactometry CharmTM to a Static Headspace Method for Measuring Odor Detection Thresholds.
Marin, A. B. *International Flavors and Fragrances, R&D, 1515 Hwy 36, Union Beach, NJ 07740*
- 8:15 a.m.
219 Unconscious Odor Discrimination, Detection and Quality Thresholds.
Radil, T.^{1,2}, and Wysocki, C.J.^{1,3} ¹Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104; ²Institute of Physiology, Czech Academy of Sciences, Prague, Czech Republic; ³Department of Animal Biology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA 19104
- 8:30 a.m.
220 Synthesis, Olfactory Properties and Molecular Modeling of Aliphatic Ketones Identified from Solitary Bees
Finke, A.¹, Sonnenberg, S.², and Weyerstahl, P.¹ ¹Technical University Berlin, Institut für Organische Chemie, D-10623 Berlin, Germany; ²Haarmann & Reimer GmbH, D-37601 Holzminden, Germany
- 8:45 a.m.
221 Formulation of a Standard Odorant Mixture to Test Human Sniffers for Specific Anosmia.
Friedrich, J.E., and Acree, T.E. Department of Food Science & Technology, Cornell University, New York State Agricultural Experiment Station (NYSAES), Geneva, New York 14456, USA.

- 9:00 a.m.
222 Sniffing Longer rather than Stronger to Maintain Olfactory Constancy.
Sobel, N.¹, Hartley, C.A.², Khan, R.³, Sullivan, E.V.^{4,1}, and Gabrieli, J.D.E.^{3,1} ¹Depts. of ¹Neuroscience, ²Symbolic Systems, ³Psychology, ⁴Psychiatry and Behavioral Science, Stanford University, Stanford, CA, 94305 USA
- 9:15 a.m.
223 Odor Identification in Mixtures: Is Olfactory Working Memory the Ultimate Limitation?
Laing, D.G., and Jinks, A. Centre For Advanced Food Research, University of Western Sydney, Bourke Street, Richmond, NSW, Australia, 2753
- 9:30 a.m.
224 The Effect of Human Axillary Odors on Memory Recollections
Chen, D.¹, and Haviland, J.² ¹Monell Chemical Senses Center, 3500 Market St, Philadelphia, PA 19104; ²Psychology Department, Rutgers University, 53 Ave E, New Brunswick, NJ 08854
- 9:45 a.m.
225 Psychological Effects of Musky Compounds: Comparision of 4,16-Androstadien-3-one, Androstenol and Muscone.
Jacob, S., McClintock, M., Department of Psychology, University of Chicago, 5730 S. Woodlawn Avenue, Chicago, IL 60637.

- 10:00 a.m. – 10:15 a.m. Refreshment Break
- 10:15 a.m. -12:15 p.m. Symposium: Short Term Impact of Environmental Chemicals
Chairpersons: W.L. Silver and J. Walker
- Dr. Martin Kendal-Reed
School of Dentistry, University of North Carolina, Chapel Hill, NC
Introductory Comments
- Dr. R.W. Bottcher
Dept. of Biological and Agricultural Engineering North Carolina State University.
"The Role of Dust in Concentrating and Transporting Odors from Swine Buildings"
- Dr. B. Danuser
Institut für Hygiene und Arbeitsphysiologie, Swiss Federal Institute of Technology 8092 Zurich, Switzerland
"Odor Annoyance: New Approaches for Assessment"

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- Dr. Dennis J. Shusterman**
University of California, San Francisco, Campus Box 0843, San Francisco, CA 94143.
"Odor-associated health complaints: Competing explanatory models."

229

- Dr. Paweł Wargocki**
*International Centre for Indoor Environment and Energy,
Technical University of Denmark, DK-2800 Lyngby, Denmark*
"Acceptability of Perceived Odor and Irritation: A Tool for Measuring Human Discomfort and Ventilation Requirements"

POSTERS

Saturday Morning - 8:00 - 12:15 p.m.

Taste Receptor Cell and Peripheral Nerve Function II
Taste Buds: Cellular Organization
Olfactory Receptors: Function and Zonal Expression

Taste Receptor Cell and Peripheral Nerve Function II

- P1 230 Taste Reactivity to Sucrose After Taste Aversion Conditioning Is Unaffected By Glossopharyngeal Nerve Transection.
Eylam, S., Garcea, M., and Spector, A.C. *Department of Psychology, University of Florida, Gainesville, FL 32611.*
- P2 231 Gustatory Responses of Common Marmoset to Compounds Sweet in Humans: Conditional Taste Aversion Test.
Danilova, V., Hellekant, G., and Roberts, T. *Department of Animal Health and Biomedical Sciences, University of Wisconsin-Madison, Madison, WI 53706.*
- P3 232 Use of the Cytosensor Microphysiometer to Study Hamster Taste Bud Cell Responses to Sweet Compounds
Khare, S.¹, Gokulan, K.¹, McGregor, R.² and Linthicum, D.S.^{1,1} *Department of Veterinary Pathobiology, College of Veterinary Medicine, Texas A&M University, College Station, TX 77843; ²Linguagen Corp., Nutley, NJ*

P4
233

- Adenovirus mediated gene transfer of GFP into cultured rat taste cells.
Stone, L. M.^{1,2}, Wilcox, C. L.³, Ruiz, C. J.^{1,2} and Kinnamon, S.C.^{1,2,1} *Department of Anatomy and Neurobiology, Colorado State University, Fort Collins, Colorado 80523; ²Rocky Mountain Taste and Smell Center, Denver, Colorado; ³Department of Microbiology, Colorado State University, Fort Collins, Colorado 80523*

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234

- Physiological Recordings from Gustducin Expressing Taste Cells in GFP-Tagged Transgenic Mice.
Ogura, T.^{1,3}, Lin, W.^{1,3}, Kozak, J.A.², Zheng, Z.², Margolskee, R.F.² and Kinnamon, S.C.^{1,3,1} *Colorado State University, Fort Collins, CO 80523; ²Howard Hughes Medical Institute, The Mount Sinai School of Medicine, New York, NY 10029; ³The Rocky Mountain Taste and Smell Center, Denver, CO 80262*

P6
235

- Molecular Cloning and Characterization of Genes Specifically Expressed in Gustducin-Positive Taste Receptor Cells.
Huang, L., Zheng, Z., and Margolskee, R. F. *Department of Physiology and Biophysics, Howard Hughes Medical Institute, Mount Sinai School of Medicine, 1425 Madison Avenue, Box 1677, New York, New York 10029*

P7
236

- Partial Rescue of Gustducin Null Mice by Transgenic Expression of Transducin.
He, W., and Margolskee, R.F. *Department of Physiology and Biophysics, Howard Hughes Medical Institute, Mount Sinai School of Medicine, 1425 Madison Avenue, Box 1677, New York, New York 10029*

P8
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- Glutamate Chemoreception in *Paramecium*.
Bergeron, A., and Van Houten, J.L. *University of Vermont, Department of Biology, Burlington, VT 05405 USA*

P9
238

- Functional Expression of Brain and Taste Forms of Metabotropic Glutamate Receptor 4 (mGluR4) in Cultured Chinese Hamster Ovary (CHO) Cells.
Landin, A.M., and Chaudhari, N. *Dept. of Physiology and Biophysics, University of Miami School of Medicine, Miami, FL 33101*

P10
239

- Development of Glutamate Receptors in Rat Taste Buds
Kim, K.N.^{1,2}, Caicedo, A.¹, and Roper S.D.^{1,1} *Department of Physiology and Biophysics, University of Miami School of Medicine, Miami, FL; ²Department of Oral Physiology, College of Dentistry, Kangnung National University, Kangnung, Korea*

P11
240

- Synaptic Glutamate Receptors in Rat Taste Buds.
Caicedo, A., Kim, K. N., and Roper, S. D. *Department of Physiology and Biophysics, University of Miami School of Medicine, Miami, FL 33136*

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- P12 Taste Stimuli Induce Transmitter Release at Rat Taste Bud Synapses *in vitro*.
Jafri, M. S., and Roper, S. D. *Department of Physiology and Biophysics, University of Miami School of Medicine, Miami FL 33136.*

Taste Buds: Cellular Organization

- P13 Migration of BrdU-Labeled Cells in Rat Vallate Taste Buds During Cell Renewal
Cho, Y.K., Ndubuzi, O., and Smith, D.V. *Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201*

- P14 Proliferation of Taste Receptor Cells is Lower During Early Postnatal Rat Development as Compared to Adults.
Hendricks, S. J., and Hill, D. L. *University of Virginia, Charlottesville, VA 22903*

- P15 Molecular cloning of novel type calpains from catfish barbel epithelium
Ookura, T¹, Koyama, E², Brand, J.G.^{2,3}, and Kawamura, Y¹ ¹*National Food Research Institute, Tsukuba, Ibaraki 305-8642, Japan*; ²*Univ. of Pennsylvania, Philadelphia 19104*; ³*Monell Chemical Senses Center, Philadelphia, PA 19104, USA*

- P16 Localization of ENaC in Taste Buds. Vinnikova, A. K.^{1,2}, DeSimone, J. A.², McCarty, J. M.^{1,2}, Feldman, G. M.^{1,2}, and Benos, D.J.³ ¹*Department of Veterans Affairs Medical Center, Richmond, VA 23249*; ²*Virginia Commonwealth University, Richmond, VA 23298*; ³*University of Alabama, Birmingham, AL 35294*

- P17 Immunocytochemical Markers for Light and Dark Cells in Mouse Taste Buds
Christy, R.C.¹, Yu, C.¹, Pardo, J.M.², Boughter, J.D., Jr.¹, and Smith, D.V.
¹*Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore, MD 21201*; ²*Division of Otolaryngology-Head and Neck Surgery, University of Maryland School of Medicine, Baltimore, MD 21201*

- P18 Are Neuron Specific Enolase, Serotonin and Protein Gene Product 9.5 Present in "Type III" Cells of Rat Taste Buds?
Yee, C.L., Böttger, B., and Finger, T.E. *Rocky Mountain Taste and Smell Center and Department of Cellular and Structural Biology, University of Colorado Health Sciences Center, Denver, CO 80262*

- P19 Relation of the Lewis-b carbohydrate epitope to functional markers in rat taste-bud cells
Pumplin, D.W. *Dept. of Anatomy/Neurobiology, Univ. of Maryland Schl. of Med.*

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- P20 Colocalization of Serotonin-like Immunoreactivity with Synaptic Proteins in Taste Buds of the Rat.
Bourne, J.^{1,2}, and Kinnamon, J.C.^{1,2} ¹*Department of Biological Sciences, University of Denver, Denver, CO 80208*; ²*The Rocky Mountain Taste and Smell Center, Denver, CO*

- P21 Taste Cells with Synapses Express SNAP-25-Like Immunoreactivity.
Yang, R.B.^{1,2}, Crowley, H.H.^{1,2}, and Kinnamon, J.C.^{1,2} ¹*Department of Biological Sciences, University of Denver, Denver, CO 80208*; ²*The Rocky Mountain Taste and Smell Center, Denver, CO*

- P22 Immunohistochemical Analysis of Synaptic Proteins in Foliate Taste Buds of the Rat.
Marzulli, D., and Kinnamon, J.C. ¹*Department of Biological Sciences, University of Denver, Denver, CO 80208*; ²*Rocky Mountain Taste and Smell Center, Denver, CO 80262*

- P23 Localized Beta Radiation Causes Isolated Loss of Taste Receptor Cells.
Nelson, G.M.¹, Mellenburg, D.², and Robbins, M.E.C.³ ¹*Department of Anatomy and Cell Biology*, ²*Department of Radiology*, and ³*Department of Radiation Biology, University of Iowa, Iowa City, Iowa 52245*.

- P24 Degeneration of Fungiform Papillae after Selective Denervation of the Lingual Nerve in 10-day-old Rats.
Guagliardo, N. A., Sollars, S. I., and Hill, D. L. *Department of Psychology, University of Virginia, Charlottesville, VA 22903*

Olfactory Receptors: Function and Zonal Expression

- P25 Evolution of the Vertebrate Olfactory Receptor Gene Family
Freitag, J., Ludwig, G., Von Buchholtz, L. and Breer, H. *University of Stuttgart-Hohenheim, Institute of Physiology, 70593 Stuttgart, Germany*

- P26 Small EST Projects on Male and Female Antennae of the Moth *Manduca sexta* Reveal a Diversity of Insect Odorant Binding Proteins.
Robertson, H. M., Martos, R., Sears, C. R., Todres, E. Z., Schmidt, L. A., Brakebill, C. M., Mostafavipour, P., Rovelstad, S. J., Walden, K. K. O. and Nardi, J. B. *Department of Entomology, University of Illinois at Urbana-Champaign, Urbana, IL 61801*

- P27 YAC transgenic approach to clarify the mechanisms of odorant receptor gene expression and specific projection of olfactory neurons
Tsuboi, A.¹, Serizawa, S.¹, Ishii, T.¹, Nakatani, H.¹, Asano, M.², Yoshihara, S.¹, Sengoku, S.¹, Suzuki, M.³, Iwakura, Y.², Nagawa, F.¹, and Sakano, H.¹ ¹*Dept. of*

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- P28
257 Biophys. and Biochem., Univ. of Tokyo, Tokyo, Japan 113-0032; ²Ctr. for Exp. Med., Inst. Med. Sci., Univ. of Tokyo, Tokyo, Japan 108-8639; ³Inst. of Mol. Embryol. and Genet., Kumamoto Univ. Sch. of Med., Kumamoto, Japan 862-0976;
- The Expression of A Cluster of Highly Homologous of Odorant Receptor Genes
Cai, H.^{1,2}, Griff, I.^{1,3}, and Reed, R.R.^{1,2,3,4} Howard Hughes Medical Institutes,
²Department of Neuroscience and ³Department of Molecular Biology and Genetics, The Johns Hopkins University School of Medicine, Baltimore, MD 21205
- P29
258 Identification of Conserved Sequence Motifs in Olfactory Receptor Proteins Which May Participate in Upstream and Downstream Signal Transduction.
Skoufos E.^{1,2}, and Shepherd G. M^{1,1}Section of Neurobiology and ²Center for Medical Informatics. Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06520.
- P30
259 Probability Considerations in the Study of Olfactory Receptor Tuning
White, J.¹, Bozza, T.C.², and Alkasab, T.K.^{1,1}Department of Neuroscience, Tufts Medical School, Boston, MA 02111; ²The Rockefeller University, New York, NY 10021.
- P31
260 Characterization of a Human Olfactory Receptor Functionally Expressed in Human Embryonic Kidney 293 Cells and *Xenopus laevis* Oocytes.
Wetzel, C.H., Oles, M., Wellerdieck, C., Kuczakowia, M., Gisselmann G. and Hatt, H. Ruhr-University of Bochum, Dept. of Cell Physiology, D-44780 Bochum, Germany
- P32
261 A Novel Olfactory Sensory Neuron Line, *Odora*, Properly Targets Olfactory Proteins and Exhibits Odorant Responses.
Murrell, J.R.¹, and Hunter, D.D.^{1,2} ¹Program in Cell, Molecular and Developmental Biology; Departments of Neuroscience, and Anatomy and Cellular Biology; Tufts University School of Medicine; Boston, MA 02111; ²Department of Ophthalmology, Tufts University School of Medicine; Boston, MA 02111.
- P33
262 Expression and Molecular Characterization of the Olfactory Receptor Gene OR-Z6.
Pyrski, M. M., and Margolis, F. L. Dept. of Anatomy & Neurobiology, University of Maryland at Baltimore, MD 21201. mpyrski@umaryland.edu
- P34
263 Molecular Models of Aldehyde Interactions in the I7 Olfactory Receptor
Singer, M.S., and Shepherd, G.M. Section of Neurobiology, Yale University School of Medicine, 236 FMB, 333 Cedar Street, New Haven, CT 06510;
<http://habibi.med.yale.edu/mike>
- P35
264 Guanidinium-based Arginine Analogs are Detected by Multiple Odorant Receptors (OR) in the Zebrafish (*Danio rerio*) Olfactory System.
Lipschitz, D.L., and Michel, W.C. Department of Physiology, University of Utah School of Medicine, Salt Lake City, Utah, 84108
- P36
265 Localization of Olfactory-Type (OR's) and Vomeronasal-Type (V2R's) Receptors in Different Olfactory Receptor Neurons of Goldfish
Anderson, K.T., and Finger, T.E. Rocky Mountain Taste and Smell Center and Department of Cellular and Structural Biology, University of Colorado Health Sciences Center, Denver, CO 80262
- P37
266 Analysis of Individual Olfactory Receptors within the Expression Zones of the Rat Olfactory Epithelium.
Iwema, C.L., and Schwob, J.E. Department of Anatomy & Cell Biology, SUNY Health Science Center, Syracuse, NY 13210
- P38
267 Zone-specific Differential Regulation of mamFas/OCAM is Maintained *in vitro*
Hamlin, J.A., and Schwob, J.E. Department of Anatomy and Cell Biology, SUNY Health Science Center, 750 E Adams Street, Syracuse, NY, 13210
- P39
268 The Role of O-CAM in Establishing Topographic Projections Between the Olfactory Neuroepithelium and the Olfactory Bulb.
Treloar, H. B.¹, Yoshihara, Y.², Mori, K.³ and Greer, C.A.¹ ¹Dept. Neurosurg. & Sec. Neurobiol., Yale Univ. Sch. Med., New Haven, CT 06510; ²Lab. Neurobiol. Synapse, Brain Science Inst., RIKEN, Japan; ³Neuronal Func. Res. Grp., Brain Science Inst., RIKEN, Japan.
- P40
269 NT-3 Expression in Olfactory Receptor Neurons and Specific Glomeruli of the Olfactory Bulb in Adult Mice.
Böttger, B.¹, Vigers, A. J.², Finger, T. E.¹ and Jones, K. R.^{2,1}Rocky Mtn. Taste & Smell Ctr. and Dept. Cell. & Struct. Biol., Univ. Colorado Health Sci. Ctr., Denver, CO 80262; ²Dept. Molec., Cell. & Devel. Biol., Univ. Colorado, Boulder CO 80309

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Saturday Afternoon - 12:15 p.m. - 7:00 p.m.

12:15 p.m. - 2:00 p.m. **Clinical Luncheon: Retinoic Acid: Is There Evidence to Support a Multi-Center Clinical Trial? (Florida Room)**
Organizers: N. Rawson and B. Cowart

Dr. A. - S. LaMantia

"Retinoic Acid and Regeneration of the Olfactory Epithelium:
Clinical Implications"

2:00 p.m. - 5:00 p.m. **Beach Time!**

5:00 p.m. - 7:00 p.m. **Beer Tasting (Florida Room)**
Organizer: J. Kinnamon

SLIDES

Saturday Evening - 7:00 p.m. - 8:00 p.m.

Mechanisms of Taste

Chairperson: J.I Glendinning

7:00 p.m. Role for Two Messengers in Bitter Taste Transduction.
270 Yan, W¹, Sunavala, G¹, Rosenzweig, S.¹, Dasso, M.¹, Brand, J.G.² and Spielman, A.I.^{1,2} ¹*Basic Science Division, New York University College of Dentistry, New York, NY 10010;* ²*Monell Chemical Senses Center, Philadelphia, PA 19104.*

7:15 p.m. Peripheral Mechanisms For Discriminating Between Different 'Bitter' Compounds In A Caterpillar
271 Glendinning, J.I. *Department of Biological Science, Barnard College, Columbia University, New York, NY 10027, USA. e-mail: jglendinning@barnard.columbia.edu*

7:30 p.m. Rapid Kinetics of Receptor Cell Firing and Second Messenger Modulation in an Insect Model System.
272 Foster, K.D.¹, Spielman, A.I.², and Kennedy, L.M.¹ ¹*Neuroscience Program, Department of Biology, Clark University, Worcester MA 01610;* ²*New York University College of Dentistry, Basic Science Division, new York, NY 10010*

7:45 p.m. Taste Perception And Responses To L-Glutamate In The Vagus Nerve Innervated Into The Alimentary Organs In Rats.
273 Torii, K.¹, Smriga, M.¹, and Niijima, A.² ¹*Ajinomoto Co., Inc. Central Research Laboratories, Kawasaki 210 - 8681, Japan;* ²*Niigata University School of Medicine, Niigata 951 - 8151, Japan*

8:00 p.m. - 9:00 p.m. **Special Lecture**
Organizer: S.C. Kinnamon

Dr. Charles S. Zuker

Howard Hughes Medical Institute, University of California, San Diego, CA
and

Dr. Nick Ryba

National Institute on Deafness and Other Communications Disorders

"Candidate Mammalian Taste Receptors"

General Discussion

9:00 - 9:15 p.m. **Refreshment Break**

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SLIDES

Saturday Evening - 9:15 p.m. - 10:15 p.m.

Localization of Gustatory Function in the CNS

Organizer: S. Travers

- 9:15 p.m. 274 Rapid Induction of Sodium Appetite Modifies Taste-Evoked Activity in Rat Nucleus of the Solitary Tract.
McCaughey, S. A.¹, and Scott, T. R.² ¹Monell Chemical Senses Center, Philadelphia, PA 19104; ²University of Delaware, Newark, DE 19716.
- 9:30 p.m. 275 Glossopharyngeal Nerve Regeneration Re-establishes Characteristic Quinine-Elicited Gaping Behavior and Fos-like Immunoreactivity in the Nucleus of the Solitary Tract.
King, C.T., Garcia, M., and Spector, A.C. Department of Psychology, University of Florida, Gainesville, FL 32611-2250
- 9:45 p.m. 276 Taste-Induced Fos Expression in Dopaminergic Neurons in the Nucleus of the Solitary Tract in the Hamster.
Davis, B.J., and Smith, H.M. Department of Anatomy & Neurobiology and Program in Neuroscience, University of Maryland School of Medicine, Baltimore MD 21201
- 10:00 p.m. 277 Human Cortical Activity for Taste Stimulation with MEG Study
Kobayakawa, T.¹, Ogawa, H.², Kaneda, H.³, Ayabe-Kanamura, S.^{1,3}, and Saito, S.¹ ¹National Institute of Bioscience and Human-Technology, AIST, MITI, Tsukuba, Ibaraki 3058572, Japan; ²Department of Physiology, Kumamoto University School of Medicine, Kumamoto, 860-0811, Japan; ³Sapporo Breweries Ltd., Shizuoka, 4250013, Japan; ⁴Institute of Psychology, University of Tsukuba, Tsukuba, Ibaraki, 3058572, Japan.

POSTERS

Saturday Evening - 7:00 p.m. - 11:00 p.m.

Human Olfactory Perception

Human Taste Perception
Clinical Studies

Human Olfactory Perception

- P1 278 Structural Equation Modeling of the Relationship Between Olfactory Functioning and Cognitive Functioning in Non-demented Younger and Older Adults.
Dulay, M. F.¹, Hattrup, K.¹, and Murphy, C.^{1,2} ¹San Diego State University, Department of Psychology; ²University of California Medical Center, at San Diego.
- P2 279 Non-uniformity of Olfactory Loss with Age.
Pelchat, M.L. Monell Chemical Senses Center, Philadelphia, PA 19104
- P3 280 Topical Ephedrine Administration and Nasal Chemosensory Function in Healthy Human Subjects
Temmel, A.F.P.¹, Quint, C.¹, Toth, J.¹, Herneth, A.², and Hummel, T.³ ¹Department of Otorhinolaryngology, University of Vienna, AKH Wien, Währinger Gürtel 18-20, 1090 Vienna, Austria; ²Department of Radiodiagnostics, University of Vienna, AKH Wien, Währinger Gürtel 18-20, 1090 Vienna, Austria; ³Department of Otorhinolaryngology, University of Dresden, Fetscherstr. 74, 01307 Dresden, Germany
- P4 281 Reduction in Perceived, Sulfurous Malodor via Cross-adaptation with Ethyl Esters.
Prete, G.^{1,2}, Gill, M.S.¹, and Wysocki, C.J. ^{1,3} ¹Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104; ²Department of Dermatology, School of Medicine, University of Pennsylvania, Philadelphia, PA 19104; ³ Department of Animal Biology, School of Veterinary Medicine, University of Pennsylvania, PA, 19104
- P5 282 Detection of l-Menthol in the Upper Airways via Olfaction
Nagata, H., Breslin, P., Dalton, P., Olver, N., and Rodriguez, I. Monell Chemical Senses Center, Philadelphia, PA 19104
- P6 283 Olfactory Communication of Emotion in Humans
Haviland, J.¹, and Chen, D.² ¹Psychology Department, Rutgers University, 53 Ave E, New Brunswick, NJ 08854; ²Monell Chemical Senses Center, 3500 Market St, Philadelphia, PA 19104

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- P7
284 Cross-Cultural Variation in Responses to Malodors
Dilks, D.D., Dalton, P., and Beauchamp, G.K. *Monell Chemical Senses Center, Philadelphia, PA 19104*
- P8
285 The Influence Of Verbal Labeling On The Perception Of Ambiguous Odors
Herz, R.S., and von Clef, J.C. *Monell Chemical Senses Center, Philadelphia, PA 19104-3308*
- P9
286 Latency, Confidence, and Consistency as Reflections of the Stability of Olfactory Knowledge.
Wise, P.M., and Cain, W.S. *Chemosensory Perception Laboratory, Department of Surgery, U.C. San Diego, La Jolla, CA 92093-0957*
- P10
287 Semantic-free Sorting of Odor Qualities by Osmic, Allosmic, and Anosmic Subjects.
Stevens, D.A.¹, and O'Connell, R. J.^{1,2} ¹*Dept. of Psychology, Clark University, Worcester, MA 01610*, ²*Dept. of Physiology, University of Massachusetts Medical Center, Worcester, MA 01655*
- P11
288 Retronasal And Orthonasal Odorant Identification Without Sniffing.
Wininger, D. A.^{1,2}, and Halpern, B. P.² ¹*Department of Psychology, Barnard College, Columbia Univ., New York NY 10027*; ²*Psychology and Neurobiology & Behavior, Cornell Univ., Ithaca NY 14853-7601*
- P12
289 Effects of Different Perceptual Strategies During Exposure to Taste/Odor Mixtures.
Prescott, J., and Francis, J. *Sensory Science Research Centre, University of Otago, Dunedin, New Zealand*
- P13
290 Right Nostril Superiority in Odor Discrimination of Non-familiar but Not Familiar Odors
Savic, I., and Torper, M. *Dept of Neuroscience, Karolinska Institute, Stockholm, Sweden*
- P14
291 Olfactory Discrimination Ability of Human and Nonhuman Primates for 10 Pairs of Enantiomers.
Laska, M., and Teubner, P. *Department of Medical Psychology, University of Munich Medical School, Goethestr. 31, D-80336 Munich, Germany*
- P15
292 Partial Concordance between Ratings of Perceived Odorant Dissimilarity and Latency to Discriminate Odorant Pairs
Newlon, JW¹, Kurtz, DB¹, White, TL¹ and Wise, PM² ¹*Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse, NY 13210*; ²*Department of Surgery, University of California at San Diego, La Jolla, CA 92039*

- P16
293 Influence of Training on the Evaluation of Odor Similarity
Ayabe-Kanamura, S.^{1,3}, Kikuchi, T.¹, Kawakami,T.² and Saito, S.³ ¹*Institute of Psychology, University of Tsukuba, Tsukuba, Ibaraki 3058572, Japan*; ²*Kyara Workshop, 6-14-1-201 Toyotama-Kita, Nerima, Tokyo 176, Japan*; ³*National Institute of Bioscience and Human-Technology, AIST, MITI, Tsukuba, Ibaraki 3058566, Japan*.
- P17
294 The Recollective Experience of Odors and Effects of Level of Processing: A Comparison to Memory for Words.
Olsson, M. J., and Lundgren, E. B. *Department of Psychology, Uppsala University, Box 1225, S-751 42, Uppsala, Sweden*.
- P18
295 Recollective Experience in Odor Memory: Influences of Age and Olfactory Familiarity
Larsson, M.^{1,2}, Bjertsjö, C.¹, and Bäckman, L. ^{1,2} ¹*Department of Clinical Neuroscience and Family Medicine, Division of Geriatric Medicine, Karolinska Institute, Stockholm, Sweden*; ²*Department of Psychology, Uppsala University, Sweden*

Human Taste Perception

- P19
296 Distribution of Tastant Concentrations Affects Psychophysical Functions: Implications for Taste Mixture Effects.
Stevens, D.A. *Clark University, Worcester, MA 01610*
- P20
297 Attentional Mechanisms in Taste Detection
Marks, L.E.^{1,2}, and Marshall, S.P.¹ ¹*John B. Pierce Laboratory, New Haven, CT 06519*; ²*Yale University, New Haven, CT 06510*
- P21
298 Taste Matching Among Three Bitter Compounds.
Breslin, P.A.S., Culotta, A.J., Kwon, M.S., and Beauchamp, G.K. *Monell Chemical Senses Center, Philadelphia, PA, 19104*.
- P22
299 PROP status does not predict sensitivity to all bitter compounds nor to suprathreshold bitterness ratings
Cubero, E.M., and Noble, A.C. *Dept. of Viticulture and Enology, University of California, One Shields Dr., Davis, CA 95616*
- P23
300 Genetic Variation and Videomicroscopy of Fungiform Papillae
Cohen, Z.D.¹, Bartoshuk, L.M.¹, and Duffy, V.B.^{1,2} ¹*Department of Surgery, Yale University School of Medicine, New Haven, CT 06520*; ²*School of Allied Health, University of Connecticut, Storrs, CT 06269-2101*

- P24
301 Spatial Taste Testing and Genetic Taste Variation.
Prutkin, J.M.¹, Fast, K.¹, Lucchina, L.A.², Snyder, D.J.³, and Bartoshuk, L.M.¹
Yale University School of Medicine, New Haven, CT 06520; ²Unilever Research U.S., Edgewater, NJ 07020; ³Florida State University, Tallahassee, FL 32312
- P25
302 Functionality of Taste Localization in Humans: Selective Expectoration of a Target.
Delwiche, J.F., Lera, M.F. , and Breslin, P.A.S. *Monell Chemical Senses Center, Philadelphia, PA, 19104*
- P26
303 Psychophysical Evidence of Monosodium Glutamate Enhancing Effect on Saltiness Perception.
Otero-Losada, M.E., Martínez, M.P., and Zamora, M.C. *Laboratorio de Investigaciones Sensoriales (LIS) CONICET, Marcelo T. de Alvear 2202 4 P, Buenos Aires, Argentina, (1122).*
- P27
304 Increases in Sensitivity for Monosodium Glutamate (MSG) After Repeated Exposures to MSG in Food.
Kobayashi, C., and Kennedy, L.M. *Neuroscience Laboratory, Biology Department, Clark University, Worcester, MA 01610*
- P28
305 Contribution of Interfacial Properties of Sapid Substances in Predicting Their Taste Quality
Mathlouthi, M., and Hutteau, F. *Laboratoire de Chimie Physique Industrielle, Faculte des Sciences, Universite de Reims Champagne-Ardenne, BP 1039 B F-51687 REIMS Cedex 2, France*
- P29
306 Effects of Gymnemic Acid on Taste Stimulus Intensity and Identification.
Hettinger, T.P.¹, Gent, J.F.¹, Frank, M.E.¹ and Marks, L.E.² ¹*Department of BioStructure & Function, School of Dental Medicine, University of Connecticut Health Center, Farmington, CT 06030; ²J.B. Pierce Laboratory and Yale University, New Haven, CT 05419.*
- P30
307 Selective Sweetness Inhibitors and A Biochemical Mechanism for Sweet Water Aftertaste
D'Angelo, L.L., King, G.A., and DuBois, G.E. *Corporate R&D, The Coca-Cola Company, P.O. Drawer 1734, Atlanta, GA 30301*
- P31
308 The Effect of L-Lactic Acid on Solutions of D- and L-Arabinose.
Siertsema, R.W., and Birch, G.G. *Department of Food Science and Technology, The University of Reading, Whiteknights, PO Box 226, Reading, RG6 6AP, UK.*

- P32
309 Chlorhexidine Affects Anion Taste in Humans.
Gent, J.F., Frank, M.E., Pepin, A. and Nadeau, M. *Department of BioStructure & Function, School of Dental Medicine, University of Connecticut Health Center, Farmington, CT 06030*
- Clinical Studies**
- P33
310 Non-demented Older Adults with the APOE $\gamma 4$ Allele Perform Poorly on Odor Memory Tasks.
Sliger, M.L.¹, Dulay, M.F.¹, Lander, T.A.², Kim, C.¹, Ranzani, J.³, Thal, L.², and Murphy, C.^{1,2} ¹*San Diego State University; ²UCSD Medical Center; ³SDSU/UCSD Joint Doctoral Program in Clinical Psychology, San Diego, CA 92120-4913; FAX: (619) 594-3773*
- P34
311 Olfactory Function and Cirrhosis of the Liver
Pabinger, S.¹, Temmel, A.F.P.¹, Quint, C.¹, Herneth, A.M.², Munda, P.³ and Ferenci, P.³ ¹*Dept. of Otolaryngology, University of Vienna, Austria; ²Dept. of Radiology, University of Vienna, Austria; ³Dept. of Gastroenterology, University of Vienna, Austria*
- P35
312 Monorhinal Odor Identification and Detection Thresholds in Patients with Seasonal Affective Disorder.
Postolache, T.T.¹, Doty, R.L.², Wehr, T.A.¹, Sher, L.¹, Turner, E.H.¹ and Rosenthal, N.E. ¹*Section on Biological Rhythms, NIMH, 10 Center Drive, Room 3S-231, Bethesda MD, 20892-1390; ²Smell and Taste Center, University of Pennsylvania Medical Center, 3400 Spruce Street PA 19104*
- P36
313 A Biopsychosocial Model of Depression /Emotional Distress in Smell Disordered Patients.
Ossebaard, C.A., Tayer, W.G., Nicassio, P.M. and Cain, W.S. *University of California San Diego, San Diego, CA 92037*
- P37
314 Failure of Physicians to Assess Olfactory Ability in Neurologic Inpatients.
Hirsch, A.R., and Colavincenzo, M.L. *Smell & Taste Treatment and Research Foundation, Chicago, IL 60611*
- P38
315 Solid-state Olfactometer for the Diagnostic Clinic
Frederickson, Christopher J.¹, Taylor, D.¹, Frederickson, Cathy J.¹, Kesslak, J.P.³, Achiriloaei, I.¹, Stewart, M.², Comparini, N.¹ and Amoore, J.⁴ ¹*Laboratory for Neurobiology, MicroFab Technologies, Inc. Plano TX; ²Fogelson Neuroscience Center, Presbyterian Hospital, Dallas TX; ³Univ. of Calif. - Irvine; ⁴deceased: Formerly of OlfactoLabs, CA.*
- P39 Perturbations of the Peripheral Olfactory System Produce Distinct Patterns of

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Odorant Identification at Similar Performance Levels

Kurzt, D.B., White, T.L., Newlon, J.W., Hornung, D.E., Sheehe, P.R., Kent, P.F., Enko, P. *Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse, NY 13210*

P40

A Clinical Test of Retronasal Olfactory Function.

Cowart, B.J.^{1,2}, Halpern, B.P.³, and Varga, E.K.¹ *Monell Chemical Senses Center, Philadelphia, PA 19104; ²Dept. Otolaryngology-Head & Neck Surgery, Thomas Jefferson University, Philadelphia, PA 19107; ³Dept. Psychology and Sect. Neurobiology & Behavior, Cornell University, Ithaca, NY 14853*

P41

Anesthesia of Chorda Tympani Nerve and Effect on Oral Pain

Tie, K., Fast, K., Kveton, J., Cohen, Z., Duffy, V.B., Green, B., Prutkin, J. and Bartoshuk, L. *Department of Surgery, Yale University School of Medicine, New Haven, CT 06520*

P42

Burning Mouth Syndrome: Damage to CN VII and Pain Phantoms in CN V

Bartoshuk, L.M.¹, Grushka, M.², Duffy, V.B.^{1,3}, Fast, K.¹, Lucchino, L.⁴, Prutkin, J.¹, and Synder, D.⁵ *Yale University School of Medicine; ²Case Western Reserve University; ³University of Connecticut; ⁴Unilever Research U.S.; ⁵ State University of Florida*

P43

Radiation Induced Changes in Taste Sensitivity.

Linschoten, M.R., and Jafek, B.W. *Rocky Mountain Taste and Smell Center, UCHSC Box B-205, 4200 East 9th Avenue, Denver CO 80262*

P44

The Effect of Space Flight and Microgravity on the Stimulation of the Chemical Senses

Olabi, A.¹, Hunter, J.B.², Lawless, H.T.^{1,3} and Levitsky, D.A.^{3,4} *Department of Food Science, Cornell University, Ithaca, NY 14853; ²Department of Agricultural and Biological Engineering, Cornell University, Ithaca, NY 14853; ³Department of Psychology, Cornell University, Ithaca, NY 14853; ⁴Department of Nutritional Sciences Cornell University, Ithaca, NY 14853*

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SLIDES

Sunday Morning - 8:00 a.m. - 11:15 a.m.

Oral Perception in Humans

Chairperson: B. J. Cowart

- 8:00 a.m. 322 Oral Stimulation with Dietary Fat Raises Postprandial Serum Triacylglycerol Levels in Humans.
Mattes R.D., and Bormann, L. *Purdue University, Department of Foods and Nutrition, W. Lafayette, IN 47906*
- 8:15 a.m. 323 The Effect Of Sodium Gluconate On The Sweetness Of Selected Intense Sweeteners And Their Synergistic Binary Mixtures
Parke, S.A., Birch, G.G., and Place, R. *Department of Food Science and Technology, University of Reading, Whiteknights, P.O. Box 226, Reading, RG6 6AP, U.K.*
- 8:30 a.m. 324 Human Taste Sensitivity to Glucose is Greater after Repeated Exposure to Fructose Rather than to Glucose in Lemonade.
Sullivan, K.D., Adamiak, B. , and Kennedy, L.M. *Neuroscience Laboratory, Biology Department, Clark University, Worcester, MA 01610*
- 8:45 a.m. 325 Thermal Induction of Taste
Green, B.G. *The John B. Pierce Laboratory and Department of Surgery (Otolaryngology), Yale School of Medicine, 290 Congress Avenue, New Haven, CT 06519*
- 9:00 a.m. Refreshment Break

Clinical Issues

Organizer: J.F. Gent

- 9:15 a.m. 326 The Nose as a Route of Administration for Therapeutic Drugs: Nasal Metabolism as a Possible Determinant of Efficacy or Toxicity
Genter, M.B.¹, Deshpandee, V.S.², and Desai, P.B.²
¹Department of Environmental Health, College of Medicine, University of Cincinnati, Cincinnati, OH 45267-0056; ²Division of Pharmaceutical Sciences, College of Pharmacy, University of Cincinnati, Cincinnati, OH 45267-0004
- A New Clinical Test for the Determination of Olfactory Recognition Thresholds

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- 9:30 a.m. 327 Kobal, G., Roscher, S., and Gisbert, F. *Institute of Experimental and Clinical Pharmacology and Toxicology, University of Erlangen-Nuremberg, D-91054 Erlangen, Germany*
- 9:45 a.m. 328 Etiologies of Olfactory Loss with Similar Performance Levels Produce Unique Patterns of Correct and Incorrect Odorant Identifications.
White, T. L., Kurtz, D. B., Sheehe, P. R. and Newlon, J. W. *Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse, NY 13210.*
- 10:00 a.m. 329 Long Term Follow-up on Patients with Surgically Treated Phantosmia
Loehrl, T., Schwob, J., and Leopold, D.A. ¹*Johns Hopkins School of Medicine;*
²*SUNY Health Science Center of Syracuse*
- 10:15 a.m. 330 Olfactory Recognition in Sjogren's Syndrome: A Twelve Year Longitudinal Follow-up:
Weiffenbach, J. M., and Brennan, M.T. *National Institute of Dental and Craniofacial Research, Bethesda, Maryland, USA.*
- 10:30 a.m. 331 Testing Olfactory Performance in Endocrinological Patients
Steiner, J.E., and Bar-Dayan, G. *Department of Oral Biology, The Hebrew University Hadassah School of Dental Medicine, POB 12272, Jerusalem 91120, Israel*
- 10:45 a.m. 332 Traumatic Brain Injury Assessed with Olfactory Event-Related Brain Potentials
Geisler, M.W.^{1,2}, Schlotfeldt, C.R.², Middleton, C.B.², Dulay, M.F.², and Murphy, C.^{1,2} ¹*University of California Medical Center, San Diego, CA;* ²*San Diego State University, Department of Psychology, San Diego, CA*
- 11:00 a.m. 333 Structural MRI Volume and Psychophysical Measurement of Olfactory Function in Persons with the Apoe 4 Genotype and in Persons with Alzheimer's Disease.
Murphy, C.^{1,3}, Fennema-Notestine, C.^{2,3}, Wiser, A.³ and Jernigan, T. L.^{2,3} ¹*San Diego State University, San Diego, CA;* ²*VA Medical Center, La Jolla, CA;* ³*UCSD School of Medicine, San Diego, CA*

Sunday, April 18, 1999

POSTERS

Sunday Morning - 8:00 a.m. - 11:00 a.m.

Feeding and Reproductive Behavior II
Vomeronasal Organ

Feeding and Reproductive Behavior II

- P1 334 The Aesthetasc-Olfactory Lobe Pathway of Spiny Lobsters is not Necessary for Odor-Activated Searching Behavior, Odor-Associative Learning, and Discrimination of Complex Odors.
Steullet, P., Flavus, T., Radman, D., Hamidani, G., Zhou, M., Duder, O., Hill, R. and Derby, C.D. *Department of Biology, Georgia State University, Atlanta, GA 30303 USA*
- P2 335 Effect of Complex Odor Cues and Shelter Availability on Crayfish Foraging Behavior.
Tomba, A.M., Keller, T.A., and Moore, P.A. *Lab for Sensory Ecology, Bowling Green State University, Bowling Green, OH 43402*
- P3 336 Occupation of Chemoreceptors and Presence of Intracellular Cyclic AMP Are Associated with Export of Photosynthetically-Generated Carbohydrate by Algae Living in Symbiotic Relationships with Cnidarian Hosts.
Trapido-Rosenthal, H.¹, Austin, J.^{1,2}, Ferrier, D.^{1,3} and Zielke, S.^{1,4} ¹*Bermuda Biological Station for Research, Ferry Reach GE-01, Bermuda;* ²*Florida State University, Tallahassee, Florida 32306, USA;* ³*Hood College, Frederick, Maryland 21701, USA;* ⁴*Technical University of Mannheim, Mannheim D-68305, Germany*
- P4 337 Electrophysiological Recordings Demonstrate That the Antennules of the Barnacle Cyprid Larva Bear Functional Chemo- and Mechanoreceptors.
Harrison, P.J.H.^{1,2}, and Sandeman, D.C. ^{1,1}*School Biological Science, University of New South Wales, Sydney, Australia. 2052;* ²*Dept. of Biology, Georgia State University, Atlanta Georgia USA 30303*
- P5 338 The Nose of the Lobster may also Function as a Hydrodynamic Receptor Organ.
Weaver, M., Guenther, C., and Atema, J. *Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543*
- P6 339 Chemosensory Mediation of Antennular Grooming in the Florida Spiny Lobster Requires Olfactory Input
Wroblewska, J., Daniel, P.C., Whalley, S. and Fischetti, M. *Department of Biology, Hofstra University, Hempstead, NY 11549-1140*

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- P7
340 Chemosensory Mediation of Antennular Grooming Behavior in Decapod Crustaceans
Daniel, P.¹, Shineman, M.^{1,2}, and Fischetti, M¹ *Department of Biology, Hofstra University, Hempstead, NY 11549-1140; ²Huntington Senior High School, Huntington, NY*
- P8
341 Sensory Information Used in Female Assessment of Males in *Procambarus clarkii*
Shauver, L. M., and Moore, P. A. *Laboratory for Sensory Ecology, Bowling Green State University, Bowling Green, Ohio 43403*
- P9
342 Urine Pheromones in the Lobster, *Homarus americanus*: Both Males and Females Recognize Individuals and Only Use the Lateral Antennule for this Task
Atema, J., Breithaupt, T., LeVay, A., Morrison, J., Mallidis, M. and Edattukaran, M. *Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543*
- P10
343 Pheromonal Cues in the Goldfish Are Perceived Within the Context of the Body Odor Within Which They Occur.
Kihslinger, R.L., and Sorensen, P.W. *University of Minnesota, St. Paul, MN 55108*
- P11
344 Miniature Solid-State Pheromone-Jet for Picoliter Dispensing
Frederickson, Christopher J.¹, Comparini, N.¹, Romero, A.¹, Wright, E.¹, Frederickson, I.¹, Sinks, M.¹, Knutson, A.² and Frederickson, Cathy J.¹
¹*MicroFab Technologies, Inc., Plano TX 75080; ²Texas A&M University, Richardson Extension, Richardson TX.*
- P12
345 Cloning of Sodefrin-like Peptide Cdna of the Sword-tailed Newt
Kikuyama, S.¹, Iwata, T.¹, and Toyoda, F.²
¹*Department of Biology, School of Education, Waseda University, Tokyo, Japan;*
²*Department of Physiology, Nara Medical University, Kashihara, Japan*
- P13
346 Effects of Methimazole on a Complex Odor Discrimination Task.
Hastings, L., and Doty, R.L. *Smell and Taste Center, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA*
- P14
347 Effects of Extraneous Odors on Canine Olfactory Detection.
Jones, M.^{1,2}, Boussom, T.^{1,2}, Paletz, E.^{1,2}, Langston, J.^{1,2}, Waggoner, P¹ and Williams, M¹ *Department of Psychology, Auburn University, Auburn University, AL 36849; ²Institute for Biological Detection Systems, Auburn University, Auburn University, AL 36849*
- P15
348 Chemistry of the Urine and the Vaginal Secretions of Golden Hamsters (*Mesocricetus auratus*).
Ma, W., Wiesler, D., and Novotny, M.V. *Department of Chemistry, Indiana University, Bloomington, IN 47405.*

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- P16
349 Sex and Systematic Genetic Differences in Sensitivity to Androstenone in Inbred Mice.
Voznessenskaya, V.V.^{1,2}, and Wysocki, C.J. ^{1,3} *Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104; ²A.N. Severtzov Institute of Ecology & Evolution, Russian Academy of Sciences, Moscow 117071 Russia; ³Department of Animal Biology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA 19104*
- P17
350 Fetal MHC odortypes influence behavior toward female mice.
Yamazaki, K., Curran, M., and Beauchamp, G.K. *Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104*
- P18
351 Olfactory Conditioning and Differential Immediate Early Gene Expression in Mice.
Forestell, C.A., Schellinck, H.M., Brown, R.E. and LoLordo, V.M. *Dalhousie University, Halifax, Canada B3H 4J1*
- P19
352 Olfactory Learning-set Formation in old Wistar Rats.
Krämer, S., and Apfelbach, R. *Dept. of Zoology, University of Tübingen, 72076 Tübingen, Germany*
- P20
353 Olfaction in Rats with Depletion of Olfactory Bulb Serotonin
Hanford, L.¹, Teldon, S.¹, Slotnick, B.¹, Coolen, L.², and Shipley, M.T.² *American University, Washington, DC 20016; ²University of Maryland School of Medicine, Baltimore, MD 21201*
- P21
354 Odor Quality Recognition in Rats with Reduced Connections to the Olfactory Bulb
Slotnick, B., and Bodyak, N. *American University, Washington, DC 20016*
- P22
355 Does Nasal Irrigation with Zinc Sulfate Produce Anosmia in the Rat?
Bodyak, N., Glover, P., and Slotnick, B. *American University, Washington, DC 20016*
- P23
356 Olfactory testing in rats without deprivation.
Rawson, N.E., Crenshaw, O., and Hyman S. *Monell Chemical Senses Center, 3500 Market St., Philadelphia PA 19104.*

Vomeronasal Organ

- P24
357 Quantitative Analysis of Changes in the Rat Vomeronasal Epithelium during Degeneration and Regeneration.
Matsuoka, M.^{1,2}, Costanzo, R.M.³, Yoshida-Matsuoka, J.³ and Ichikawa, M.¹
¹*Anatomy and Embryology, Tokyo Metropolitan Institute for Neuroscience, Fuchu, Tokyo 183-8526, JAPAN;* ²*JSPS Research Fellowships for Young Scientists;* ³*Department of Physiology, Medical College of Virginia Campus, Virginia Commonwealth University, Richmond, VA 23298-0551, USA*
- P25
358 Layer Organization of the Vomeronasal Epithelium During Regeneration
Yoshida-Matsuoka, J.¹, Ryba, N.J.P.², and Costanzo, R.M.¹ ¹*Department of Physiology, Virginia Commonwealth University, MCV campus, P.O.Box 980551, Richmond, Virginia 23298-0551;* ²*Taste and Smell Unit, NIDCR, National Institutes of Health, Bethesda, Maryland 20892*
- P26
359 Culture of Rat Vomeronasal Neurons.
Osada, T.^{1,4}, Ikai, A.¹, Costanzo, R.M.², Matsuoka, M.³, and Ichikawa, M.^{3,4}
¹*Department of Biological Sciences, Tokyo Institute of Technology, Nagatsuta, Midori-ku, Yokohama 226-0026, Japan;* ²*Department of Physiology, Medical College of Virginia Campus, Virginia Commonwealth University, Richmond, VA 23298-0551, USA;* ³*Anatomy and Embryology, Tokyo Metropolitan Institute for Neuroscience, Fuchu, Tokyo 183-8526, Japan;* ⁴*CREST of Japan Science and Technology Corporation*
- P27
360 Evidence For Receptor Neurons In The Thick Epithelium Of A Newborn Elephant's Vomeronasal Organ.
Johnson, E.W.¹, and Rasmussen, L.E.L.² ¹*Dept. of Biological Sciences, Idaho State University, Pocatello, ID 83209;* ²*Dept. of Biochemistry and Molecular Biology, Oregon Graduate Institute of Science and Technology, P.O. Box 91000, Portland, OR 97291*
- P28
361 Passage of the Harderian Gland Secretions to the Vomeronasal Organ of the Snake, *Thamnophis sirtalis*.
Rehorek, S.J.¹, Hillenius, W.J.², Quan, W.³, and Halpern, M.³ ¹*Department of Anatomy, NYCOM, Long Island, NY 11568-8000;* ²*Department of Biology, College of Charleston, Charleston, SC 29424-0001;* ³*Department of Anatomy and Cell Biology, SUNY, Brooklyn, 11203-2098.*
- P29
362 Selective Activation of G Protein β Subtypes in the Vomeronasal Organ
Boekhoff, I., Krieger, J., Schmitt, A., Löbel, D., and Breer, H. *University Stuttgart-Hohenheim, Institute of Physiology, 70593 Stuttgart, Germany*

- P30
363 Electrophysiological Properties and GTP-binding Proteins Putatively Involved in Vomeronasal Signal Transduction.
Murphy, F.¹, Tucker, K.¹, Morrison, E.E.², Dennis, J.C.², Voydanoy, V.², Srikanth, D.², Kehrl, J.H.³, and Fadool, D.A.¹ ¹*Zoology Department, College of Science and Mathematics, Auburn University, Auburn, AL 36849;* ²*Department of Anatomy, Physiology, and Pharmacology, Auburn University, Auburn, AL 36849;* ³*Laboratory of Immunoregulation, National Institute of Allergy and*
- P31
364 Initial Molecular Studies of (Z)-7-Dodecenyl Acetate as a Mammalian Pheromone.
Rasmussen, L. E. L.¹, Lazar, J.², and Prestwich, G.² ¹*Dept. of Chemistry, Oregon Graduate Institute, Beaverton, OR 97006;* ²*Dept. of Medicinal Chemistry, University of Utah, Salt Lake City, Utah*
- P32
365 The Anatomy of the Vomeronasal Organ: Characterization by Means of Nasal Endoscopy and Magnetic Resonance Imaging
Hummel, T.¹, Kühnau, D.¹, Knecht, M.¹, Abolmaali, N.², and Hüttenbrink, K.B.¹
¹*Department of Otorhinolaryngology, University of Dresden, Fetscherstr. 74, 01307 Dresden, Germany;* ²*Department of Radiology, University of Dresden, Fetscherstr. 74, 01307 Dresden, Germany*
- P33
366 Immunohistochemical Analysis of Rat Vomeronasal Organ Transplanted to Brain.
Dennis, J.C., Wolfe, K.G., and Morrison, E.E. *College of Veterinary Medicine, Auburn University, Alabama 36849*

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