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ACHEMS - 1992

PROGRAM

THE FOURTEENTH ANNUAL MEETING OF THE ASSOCIATION FOR CHEMORECEPTION SCIENCES

Hyatt, Sarasota
Florida

April 8-12, 1992

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

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Fourth Annual Frito-Lay Award for Research in Taste
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Moskowitz Jacobs Award for Research in Psychophysics of Taste & Olfaction
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Seventh Annual Kenji Nakanishi Award for Research in Olfaction
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Stanley K. Freeman Award for Research in Olfaction
International Flavors and Fragrances

GENERAL INFORMATION

1. Registration:

Wednesday evening: 5:00-7:30pm (in the Longboat Room & Prefunction Area)

Thursday-Saturday mornings: 7:30-9:00am (in the Longboat Room)

Thursday evening: 6:00-7:00pm (in the Longboat Room)

2. All slide sessions will be held in the Hernando Desoto Ballroom.

3. All poster sessions will be held in the Sara Desoto Ballroom.

4. All morning posters should be removed by 3:00pm.

5. All evening posters should be removed by midnight.

6. All speakers in slide sessions should meet with the session chairperson and give slides to the projectionist at least 20 minutes prior to the start of the session.

7. Times for the Clinical Luncheon and the Industrial Reception will be announced at the conference.

8. There will be a van from the hotel to Lido Beach Thursday through Saturday afternoons. The van will leave from the front of the hotel on the hour, beginning at 1pm. It will leave Lido Beach to return to the hotel on the half hour. The last bus will leave Lido Beach at 4:30 pm.

9. The Hyatt will provide a cash "Quick-Lunch Sandwich Cart" at the conference center daily at 12:30PM.

ASSOCIATION FOR CHEMORECEPTION SCIENCES

Fourteenth Annual Meeting

1:00 pm	Executive Committee Meeting
5:00 - 7:30	Registration
5:00	Organizational Meeting for Graduate Students
6:30 - 8:00	Opening Buffet
8:00 - 8:30	Welcome, Opening Remarks and Presentation of Awards Barry W. Ache, Executive Chairperson
8:30 - 9:30	GIVAUDAN-ROURE LECTURE Dr. Murray Goodman Professor of Chemistry University of California, San Diego "Probing the Taste Receptors Using Constrained Taste Ligands"
9:30	SOCIAL Reception and Cash Bar

SLIDES

Thursday morning - 8:00-12:30 p.m.

Olfaction and Taste: Clinical Aspects

Chairperson: Donald Leopold

8:00 #1 Odorant Identification Testing in the Young Child. JUDITH ANDERSON, *UCSD Medical Center*; LISA MAXWELL, *San Diego State University*; AND CLAIRE MURPHY, *San Diego State University and UCSD Medical Center.*

8:15 #2 Development and Degeneration of Human Olfactory Epithelium. BARBARA R. TALAMO, WEN-HUI FENG AND JOHN S. KAUER, *Tufts Medical School.*

8:30 #3 Olfactory Perception of Androstenone is Related to Male Infertility. JACOB STEINER, RONEN GASPAR, *Department of Oral Biology, Hebrew University Dental School, Israel*; ALEXANDER SIMON, *Department of Gynecology and Obstetrics, Hadassah University Hospital, Israel*; JUDITH GANCHROW, *Department of Oral Biology, Hebrew University Dental School, Israel*; AND CHARLES J. WYSOCKI, *Monell Chemical Senses Center.*

8:45 #4 Endoscopic Sinus Surgery: Its Role in Sinusitis and Inflammatory Smell Impairment. TERENCE M. DAVIDSON, *University of California, San Diego, Medical Center*

9:00 #5 Endoscopic Biopsy of Human Olfactory Epithelium. DONALD C. LANZA, DAVID A. MORAN, RICHARD L. DOTY, JOHN Q. TROJANOWSKI, DONAH CRAWFORD AND DAVID W. KENNEDY, *Smell and Taste Center, University of Pennsylvania.*

9:15 #6 Intermediate Voltage Electron Microscopy (IVEM) of Olfactory Epithelia in Patients with Parkinson's Disease and Alzheimer's Disease. D.T. MORAN, J.C. ROWLEY III, D.C. LANZA, I. KRATSKIN, D.W. KENNEDY AND R.L. DOTY, *Smell and Taste Center, University of Pennsylvania.*

9:30 #7 Olfactory Recognition in Sjogren's Syndrome. JAMES M. WEIFFENBACH AND PHILIP C. FOX, *National Institute of Dental Research.*

9:45 #8 Burning Mouth Syndrome and Sjogren's Syndrome: I. Comparison of Clinical Profiles. APRIL E. MOTT, *Connecticut Chemosensory Clinical Research Center, Department of Medicine*; JONATHAN M. CLIVE, *Connecticut Chemosensory Clinical Research Center, Behavioral Science and Community Health;* AND LESLIE BOUVIER, *Connecticut Chemosensory Clinical Research Center, University of Connecticut School of Dental Medicine, University of Connecticut Health Center.*

10:00 #9 Burning Mouth Syndrome and Sjogren's Syndrome: II. Comparison of Clinical Dynamics. JONATHAN M. CLIVE, *Connecticut Chemosensory Clinical Research Center, Behavioral Science and Community Health*; APRIL E. MOTT, *Connecticut*

Chemosensory Clinical Research Center, Department of Medicine, University of Connecticut School of Dental Medicine; AND LESLIE BOUVIER, *Connecticut Chemosensory Clinical Research Center, University of Connecticut School of Dental Medicine, University of Connecticut Health Center*

10:15 **Refreshment Break**

10:45 #10 Anesthesia of the Chorda Tympani Nerve: Insights into a Source of Dysgeusia. K. YANAGISAWA, L.M. BARTOSHUK, T.A. KARRER, J.F. KVETON, *Yale University School of Medicine*; F.A. CATALANOTTO, *University of Medicine and Dentistry of New Jersey*; C.D. LEHMAN, *University of Washington Medical School*; AND J.M. WEIFFENBACH, *National Institute of Dental Research.*

11:00 #11 Mixture Suppression Measured by Thresholds: Implications for Evaluation of Taste Losses in Aging. JOSEPH C. STEVENS AND JULIANNE HOFFMAN, *John B. Pierce Laboratory.*

11:15 Symposium: Olfactory Event-Related Potentials

S1 #12 Opening Remarks - Jack Pearl, NIDCD, National Institues of Health

S2 #13 Olfactory Event-Related Potentials: State-of-Art Opportunities and Needs. G. KOBAL, *Department of Pharmacology and Toxicology, University of Erlangen-Nurnberg, Germany.*

S3 #14 Differentiating and Controlling Olfactory and Trigeminal Stimulation. JAMES D. PRAH, *U.S. EPA, RTP.*

S4 #15 Olfactory Evoked Potentials in Animals and Humans. W. JAMES EVANS, SONALI DeFONSEKA, HUNG NGUYEN AND ARNOLD STARR, *University of Califorina, Irvine.*

S5 #16 Inspiration-Based Averages of Olfactory Event-Related Potentials. TYLER S. LORIG, MEG McKERNAN AND GREG HICKS, *Washington and Lee University.*

POSTERS

Thursday morning - 8:00-12:00 noon

Chemical Ecology and Pheromones

P1 #17 Expression of Urinary H-2 Odortypes by Infant Mice. KUNIO YAMAZAKI, GARY K. BEAUCHAMP, YOSHIHISA IMAI, *Monell Chemical Senses Center*; JUDITH BARD AND EDWARD A. BOYSE, *University of Arizona*.

P2 #18 Genetic Control and Expression of the Major Urinary Proteins (MUPs) in Laboratory Mice: MUPs as a Potential Pheromone Messengers? GENNADY A. CHURAKOV, ANATOLY A. PHILIMONENKO, *St. Petersburg State University;* AND SERGEJ N. NOVIKOV, *Pavlov Institute of Physiology, St. Petersburg, Russia.*

P3 #19 Human Axillary Odors and Their Precursors. GEORGE PRETI, XIAO- NONG ZENG, *Monell Chemical Senses Center*; JAMES J. LEYDEN, KENNETH J. MCGINLEY, *Department of Dermatology, University of Pennsylvania;* AND ANDREW I. SPIELMAN, *Department of Oral Medicine and Pathology, New York University*.

P4 #20 An Unusual Compound and Further Characterization of a Pre-Ovulatory Pheromone of Asian Elephants, Elephas maximus. BETS RASMUSSEN, *Department of Chemical and Biological Sciences, Oregon Graduate Institute*; G. DOYLE DAVES, *Department of Chemistry, Rensselaer Polytechnic Institute*; AND TERRY D. LEE, *Beckman Research Institute of the City of Hope.*

P5 #21 Antecedents and Consequences of Mating in Mongolian Gerbils. MIRTA MULHARE, MEKAEL BAREHE, YESSENIA COELLO AND MILDRED GREEN, SUNY/*College at Old Westbury*.

P6 #22 Effects of Contact with Males on Metabolic Rate and Food Intake in Female Voles. RHONDA R. GARDNER, JOHN J. LEPRI AND ROBERT E. GATTEN, JR., *Department of Biology, University of North Carolina at Greensboro.*

P7 #23 Do Large, Frequently-Changed Cages Increase Reproduction at the Expense of Pup Mortality in Prairie Voles? BARBARA DAVIDSOHN AND JOHN J. LEPRI, *Department of Biology, The University of North Carolina at Greensboro*.

P8 #24 Discrimination of Sex Pheromones by the Cabbage Looper Moth, Trichoplusia ni (Hubner). M.S. MAYER, *USDA, Gainesville*.

P9 #25 Olfactory Modulation of Pheromone-Mediated Flight in Moths. T.C. BAKER, *Department of Entomology, University of California, Riverside*.

P10 #26 Biologically Based Repellents Reduce Food Consumption in a Forest Pest, The Mountain Beaver. GISELA EPPLE, *Monell Chemical Senses Center;* J.R. MASON, D. NOLTE, *Monell Chemical Senses Center and USDA Denver Wildlife Research Center*; AND D. CAMPBELL, *USDA Denver Wildlife Research Center.*

P11 #27 The Olfactory Sensitivity of Sea Lamprey to Amino Acids is Specifically Restricted to Arginine. WEIMING LI AND PETER W. SORENSEN, *Department of Fisheries and Wildlife, University of Minnesota*.

P12 #28 Run or Play: Chemically Stimulated Behaviors Related to Shell Fit. D. RITTSCHOF AND J. KATZ, *Duke University Marine Laboratory*.

P13 #29 Effects of Flow Regime and Speed on the Structure of an Odor Plume: Implications for Orientation Strategies of Aquatic Animals, PAUL A. MOORE, *Departments of Pharmacology and Psychiatry and Neuroscience Training Program, University of Colorado Health Sciences Center;* RICHARD K. ZIMMER-FAUST, MARC J.

WEISSBURG, *Department of Biology and Marine Sciences Program, University of South Carolina*; J. MICHAEL PARRISH AND GREG A. GERHARDT, *Departments of Pharmacology and Psychiatry and Neuroscience Training Program, University of Colorado Health Science Center.*

P14 #30 Chemosensory Orientation in Fully Defined Turbulent Flow. MARC WEISSBURG AND R.K. ZIMMER-FAUST. *Department of Biology, University of South Carolina.*

P15 #31 Peptide Inducers to Settlement in Oyster Larvae, RICHARD K. ZIMMER-FAUST, *Department of Biology and Marine Science Program, University of South Carolina*.

Animal Behavior: Olfaction

P16 #32 A Possible Olfactory Component Mediating Prey Search in a Carnivorous Leech. TED W. SIMON, *Georgia State University*; MICHAEL S. PHONG, *Emory University;* AND KEVIN BARNES, *Georgia State University.*

P17 #33 Role of Olfaction in Recognition of Dominance in the American Lobster (Homarus americanus. CHRISTY KARAVANICH AND JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory*.

P18 #34 The Sources of Sex Recognition Odors in Meadow Voles: Effects of Daylength and Gonadal Hormones. MICHAEL H. FERKIN AND ROBERT E. JOHNSTON, *Cornell University.*

P19 #35 Social Organization in a Colony of Olfactory Bulbectomized Male Mice. LAURA L. LIEBENAUER AND BURTON SLOTNICK, *The American University.*

P20 #36 Age Related Differences in Olfactory Sensitivity in Wistar Rats after Low Level Formaldehyde Gas Exposure. ELKE WEILER AND R. APFELBACH, *University of Tubingen, Department of Zoology.*

P21 #37 The Effect of Methyl Bromide on Measures of Olfactory Function. JAMES E. EVANS AND LLOYD HASTINGS, *Department of Environmental Health, University of Cincinnati*.

P22 #38 The Role of Conditioned Odor Aversions in the "Sick Building Syndrome". DOUGLAS G. KOHLRIESER, JAMES E. EVANS AND LLOYD HASTINGS, *Department of Environmental Health, University of Cincinnati.*

Animal Behavior: Taste

P23 #39 Taste Characteristics of ß-D-Fructose Derivatives in Rats. CHARLES N. STEWART, MARCUS W. THOMSEN, SUSAN M. PACANA, KAREN M.L. CIANCI, *Departments of Psychology and Chemistry, Franklin & Marshall College*; PANKAJ S. SHAH AND JOSEPH G. BRAND, *Monell Chemical Senses Center*.

P24 #40 Anterior Oral Cavity Gustatory Denervations Produce Minimal Effects on Acquisition of Aversions to NaCl or Sucrose. LISA S. RASKIN, LISA AKEY AND SUSAN TRAVERS, *Ohio State University*.

P25 #41 Prior Exposure to Physiologic Levels of Estrogen Mitigates Estrogen-Induced Conditioned Taste Aversions. AMANDA MERWIN, RICHARD L. DOTY AND DANIEL DEEMS, *Smell and Taste Center, University of Pennsylvania.*

P26 #42 A Study of Sweet Taste Behavior in Old Naive Fischer-344 Rats. KURT THAW, J.C. SMITH, *Florida State University;* I.J. MILLER, JR., *Bowman Gray School of Medicine, Wake Forest University;* and R. KELLEY, *Florida State University.*

P27 #43 Photoperiodic Control of Diet Self-Selection by Siberian Hamsters. JACQUELINE B. FINE-LEVY AND TIMOTHY J. BARTNESS, *Departments of Psychology and Biology, Georgia State University.*

P28 #44 The Effect of K+ Channel Blockers on Mudpuppy Feeding Behavior. ANDREW G. BOWERMAN AND SUE C. KINNAMON, *Colorado State University and The Rocky Mountain Taste and Smell Center*.

P29 #45 The Odor of Sucrose in Short-Term Taste Tests in Rats. JAMES C. SMITH, JULIANNE SCHUMM AND JODI R. DOTY, *Florida State University.*

P30 #46 Gustatory and Olfactory Detection Performance in Hypothyroid Rats. GARY M. BROSVIC, *Rider College*; JUDITH M. RISSER, RICHARD L. DOTY AND CHENG LI, *Smell and Taste Center, Hospital of the University of Pennsylvania.*

P31 #47 Isolation of Hawaiian Drosophila Variants Which Prefer Glucose to Fructose at Equipotent Suprathreshold Concentrations. JASON E. POSKANZER, *Department of Biology and Neuroscience Program;* LYNNE RUDNICK, *Department of Psychology and Neuroscience Program;* CHENGTAO HER, *Department of Biology and Neuroscience Program;* AND LINDA M. KENNEDY, *Departments of Biology and Psychology and Neuroscience Program, Clark University.*

Receptor Cell Structure: Taste

P32 #48 Are Basal Cells in Taste Buds Identical to Cutaneous Merkel Cells? RANDY TAYLOR, RONA DELAY AND STEPHEN ROPER, *Colorado State University and The Rocky Mountain Taste and Smell Center.*

P33 #49 Effects of Denervation on Foliate Taste Buds in the Golden Hamster. L.D. SAVOY AND M.A. BARRY, *University of Connecticut Health Center.*

P34 #50 Behavioral and Histological Changes in Post-Irradiation Gustatory Dysfunction. GINA M. NELSON AND THOMAS E. FINGER, *Rocky Mountain Taste and Smell Center and University of Colorado Health Science Center.*

P35 #51 Strain Differences in Glucuronidase Activity in Mouse Taste Buds. LESLIE M. STONE AND THOMAS E. FINGER, *University of Colorado Health Science Center.*

P36 #52 Polysialic Acid and NCAM Expression in the Nerve Fibers and Taste Buds of the Rat Vallate Papilla. PIROSCHKA HORVATH, RAISA KLEVITSKY, RICHARD A. AKESON, MICHAEL T. SHIPLEY AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P37 #53 Light and Electron Microscopic Demonstration of Lectin Binding on the Anuran Taste Disc. MARTIN WITT AND KLAUS REUTTER, *Department of Anatomy, University of Tubingen, Germany.*

P38 #54 Expression of Blood Group Antigens by Cells in the Vallate Papilla of the Rat. RAISA KLEVITSKY, PIROSCHKA HORVATH, MICHAEL T. SHIPLEY, RICHARD A. AKESON AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P39 #55 Laminin During Development of Lingual Gustatory Organs in the Rat. J.P. MBIENE AND C.M. MISTRETTA, *School of Dentistry, University of Michigan.*

Vomeronasal/Accessory Bulb Structure

P40 #56 Calbindin-Like Immunoreactivity in a Putative Human Vomeronasal Organ. EDWARD W. JOHNSON, PAMELA M. ELLER AND BRUCE W. JAFEK, *Department of Otolaryngology and Rocky Mountain Taste and Smell Center, University of Colorado Health Science Center.*

P41 #57 Connections of the Accessory Olfactory Bulb in the Rat: Evidence for Afferents from the Medial Division of the Anterior Olfactory Nucleus. TILAT A. RIZVI, MATTHEW ENNIS AND MICHAEL T. SHIPLEY, *University of Cincinnati.*

P42 #58 The Vomeronasal Organ of the Domestic Pig (Sus scrofa). KATHLEEN M. DORRIES, *Cornell University.*

Thursday afternoon - 4:00-6:00 p.m.

Workshop: The Process and Promise of Molecular Biology for the Chemical Senses: A Primer

Discussants: FRANK MARGOLIS, RANDALL REED, ROBERT MARGOLSKEE AND STEPHEN HELFAND

SLIDES

Thursday evening - 7:00-10:30 p.m.

Olfaction: Processes of Transduction

Chairperson: Frank Margolis

7:00 #59 Sulfated Sex Steroids: A New Class of Olfactory Stimulants with Pheromonal Actions in Teleost Fish. PETER W. SORENSEN, *Department of Fisheries and Wildlife, University of Minnesota*; AND SANDY A.P. SCOTT, *Fisheries Laboratory, United Kingdom.*

7:15 #60 Odorant Binding to Olfactory Receptor Molecules in the Spiny Lobster: Mixture Interactions and G-Proteins. KIRBY OLSON, CHARLES DERBY AND WILLERT LYNN, *Georgia State University.*

7:30 #61 Molecular Mechanisms of Olfactory Signal Transduction. H. BREER, I. BOEKHOFF, J. KRIEGER, K. RAMING, J. STROTMANN AND E. TAREILUS, *Institute of Zoophysiology, University Stuttgart-Hohenheim, FRG.*

7:45 #62 Mucosal Inherent Activity Patterns in the Rat: Evidence from Voltage Sensitive Dyes. S.L. YOUNGENTOB, P.F. KENT, P.R. SHEEHE, J.E. SCHWOB, M.M. MOZELL AND E. TZOUMAKA. *Departments of Physiology, Preventive Medicine, Anatomy and Cell Biology, and the Clinical Olfactory Research Center, SUNY HSC, Syracuse.*

8:00 #63 Modulation of Odor Transduction by Membrane-Permeable Analogs of cAMP. T.D. BAHNSON AND V.E. DIONNE, *University of California, San Diego.*

8:15 #64 Rp-cAMPS: A Membrane-Permeant Antagonist of Cyclic Nucleotide-Gated Cation Channels from Olfactory Receptor Neurons. RICHARD H. KRAMER, GARETH R. TIBBS AND STEVEN A. SIEGELBAUM, *Center for Neurology and Behavior and HHMI, Columbia University.*

8:30 #65 Photolysis of Caged Cyclic Nucleotides Used to Study the Olfactory Transduction Mechanism. GRAEME LOWE AND GEOFFREY H. GOLD, *Monell Chemical Senses Center.*

8:45 Refreshment Break

9:00 #66 Two Types of Mechanisms for the Regulation of the Activity of the Olfactory Cyclic Nucleotide-Gated Ion Channel by Divalent Cations. FRANK ZUFALL, *Physiological Institute, Munich*; AND STUART FIRESTEIN, *Section of*

Neurobiology, Yale Medical School.

9:15 #67 Evidence for an IP3-Gated Channel Protein in Isolated Rat Olfactory Cilia. D. RESTREPO, J.H. TEETER, *Monell Chemical Senses Center*; A.G. BOYLE, *Veterans Affairs Medical Center*; J.F. MARECEK, G.D. PRESTWICH, *State University of New York, Department of Chemistry*; AND D.L. KALINOSKI, *Monell Chemical Senses Center.*

9:30 #68 Taurocholic Acid Signal Transduction in Olfactory Rosettes from Atlantic Salmon. DENNIS E. RHOADS, YING HAR LO, SUSAN L. BELLIS AND TERENCE M. BRADLEY, *University of Rhode Island.*

9:45 #69 OLF-1: An Olfactory Specific DNA Binding Protein. F.L. MARGOLIS, C. STEIN-IZSAK, K. KUDRYCKI, M. GRILLO, C. BEHN, M. SAKAI AND J. CORBIN, *Department of Neurosciences, Roche Institute of Molecular Biology.*

10:00 #70 New Olfactory Genes Isolated by Enhancer Trapping in Drosophila. JUAN RIESGO, CRAIG WOODARD, PETER GAINES, DEBASISH RAHA, DARIA HEKMATPANAH AND JOHN CARLSON, *Yale University.*

10:15 #71 Molecular Genetics of Olfaction: *Pentagon* is a Gene Required for Response to a Specific Odorant. S.L. HELFAND, *University of Connecticut Health Center.*

POSTERS

Thursday evening - 7:00-10:30 p.m.

Central Pathways: Olfaction/Vomeronasal

P1 #72 Paired Single Unit Recordings Reveal Synaptic Interactions Between Local and Output Interneurons in the Olfactory Glomeruli of an Insect. THOMAS A. CHRISTENSEN, BRIAN WALDROP, IAN D. HARROW AND JOHN G. HILDEBRAND, *ARL Division of Neurobiology, University of Arizona.*

P2 #73 Norepinephrine Inhibits Synaptic Transmission and Calcium Currents in Olfactory Bulb Neurons via a G-Protein Coupled Mechanism. PAUL Q. TROMBLEY AND GORDON M. SHEPHERD, *Section of Neurobiology, Yale Medical School.*

P3 #74 Analyses of Synaptic and Afferent Fiber Organization in Piriform Cortex of PCD Mice Following Mitral Cell Loss. JUAN C. BARTOLOMEI AND CHARLES A. GREER, *Sections of Neurosurgery and Neurobiology, Yale University School of Medicine.*

P4 #75 Monoaminergic Innervation of Rat Piriform Cortex. MATTHEW ENNIS, TILAT A. RIZVI AND MICHAEL T. SHIPLEY, *University of Cincinnati.*

P5 #76 Enhanced Survival and Sprouting of Cultured Mouse Olfactory Bulb Neurons Following Treatment with NGF and FDU. LUZHI GUO AND STEPHEN P. FRACEK, JR., *Department of Biological Sciences and Center for Network Neuroscience, University of North Texas.*

P6 #77 Analysis of Catecholamine Concentrations in the Salamander Olfactory Bulb. D.S. KNIGHT, S.S. FOSTER AND K.A. HAMILTON, *Department of Cellular Biology and Anatomy, Louisiana State University Medical Center.*

P7 #78 GABA-Immunoreactive Centrifugal Axon Terminals in the Frog Olfactory Bulb. I. KRATSKIN, *Smell and Taste Center, University of Pennsylvania; Sechenov Institute, St. Petersburg, Russia*; J.P. RIO, *Hôpital de la Salpêtriére, Paris.*

P8 #79 Primary Olfactory Projections Beyond the Olfactory Bulb in Mammals. ARIELLA G. MONTI-GRAZIADEI, *Department of Biological Science, Florida State University.*

P9 #80 Functional Activity Maps in the Olfactory CNS of the Lobster. E. ORONA, *Whitney Laboratory and Departments of Zoology and Neuroscience, University of Florida*; K.M. GUTHRIE, C.M. GALL, *Departments of Anatomy and Neurobiology, University of California, Irvine;* J.M. FADOOL, R.M. GREENBERG AND B.W. ACHE, *Whitney Laboratory and Departments of Zoology and Neurosciences, University of Florida.*

P10 #81 Pioneering Olfactory Axons and the Induction of the Olfactory Bulb. QIZHI GONG AND MICHAEL T. SHIPLEY, *University of Cincinnati.*

P11 #82 Patch-Clamp Recordings of Spiking and Nonspiking Interneurons from Rabbit Olfactory Bulb Slices. H. HATT, J. BUFLER, T. OPITZ AND F. ZUFALL, *Physiologisches Institut der TU Munchen, FRG.*

P12 #83 Responses of Single Olfactory Bulb Neurons in the Channel Catfish to Binary Mixtures of Amino Acids and to Their Individual Components. J. KANG AND J. CAPRIO, *Louisiana State University.*

P13 #84 Electrophysiological Characterization of Oscillatory Interneurons in the Crayfish Olfactory Pathway, DeFOREST MELLON, *University of Virginia;* D.C. SANDEMAN & R.E. SANDEMAN, *University of New South Wales.*

P14 #85 Laminar Contributions to Inhibition During Olfactory Bulb Response to Odor: Computer Simulation. MICHAEL MEREDITH, *Department of Biological Science, Florida State University.*

P15 #86 Morphology and Electrophysiology of Rat Olfactory Bulb Mitral and Tufted Cells. PATRICK I. EZEH AND JOHN W. SCOTT, *Department of Anatomy/Cell Biology, Emory University.*

P16 #87 On the Use of Information Theory to Characterize the Network Dynamics of Cultured Olfactory Bulb Activity. JON C. WEIL AND STEPHEN P. FRACEK, Jr., *Department of Biological Sciences and Center for Network Neuroscience, University of North Texas.*

P17 #88 Participation of GABAergic and Glutamanergic Synaptic Pathways During Electrically-Evoked Responses in Salamander Olfactory Bulb In Vitro. DAVID P. WELLIS AND JOHN S. KAUER, *Neuroscience Program, Tufts-New England Medical Center.*

P18 #89 Odor-Induced Glycogen Metabolism in the Olfactory Bulb of the Fetal Rat. ROBERT COOPERSMITH, DIANE SIMONIK, TINA HAGER, SCOTT ROBINSON AND WILLIAM SMOTHERMAN, *Center for Developmental Psychobiology, SUNY-Binghamton.*

P19 #90 Effect of Unilateral Naris Occlusion on the Number of Juxtaglomerular Neurons in Young Rabbits. NORBERT HALASZ, GABOR TAMAS, *Laboratory of Molecular Neurobiology, Institute of Biophysics, Biology Research Center of the Hungarian Academy of Science;* ROBYN HUDSON AND HANS DISTEL, *Institute for Medical Psychology, Ludwig-Maximilian University of Munich.*

P20 #91 Changes in Growth Factor mRNA Expression in the Rat Olfactory Bulb with Unilateral Naris Occlusion. KATHLEEN M. GUTHRIE AND CHRISTINE M. GALL, *Department of Anatomy and Neurobiology, University of California at Irvine.*

P21 #92 Developmental Changes in c-fos mRNA Expression in the Rat Main Olfactory Bulb. KATHLEEN M. GUTHRIE AND CHRISTINE M. GALL, *Department of Anatomy and Neurobiology, University of California at Irvine.*

P22 #93 Characteristics of the Reinnervated Olfactory Bulb Following Recovery from Olfactory Nerve Transection. NANCY L. KOSTER AND RICHARD M. COSTANZO, *Department of Physiology, Virginia Commonwealth University, Medical College of Virginia.*

P23 #94 Developmental Expression of OMP and N-CAM in the Nasal Chemosensory Systems of the Postnatal Brazilian Short-Tailed Opossum, M. domestica. LENA SHNAYDER AND MIMI HALPERN, *Program in Neural and Behavioral Science, SUNY-Downstate.*

P24 #95 The Role of Serotonin in Early Olfactory Learning. C.L. KIRSTEIN, S. RANGEL AND M. LEON, *Department of Psychobiology, University of California, Irvine.*

P25 #96 Developmental Course of Early Olfactory Learning. CYNTHIA C. WOO AND MICHAEL LEON, *University of California, Irvine.*

P26 #97 Cats Can Discriminate Odors Without the Prefrontal Cortex. YOICHI OGAWA AND FUMIAKI MOTOKIZAWA, *Department of Physiology, Nara Medical College.*

P27 #98 Binding Sites of Two Lectins in the Vomeronasal System of Rats. SHIGERU TAKAMI, PASQUALE P.C. GRAZIADEI, *Department of Biological Science, Florida State University;* AND MASUMI ICHIKAWA, *Tokyo Metropolitan Institute for Neurosciences.*

P28 #99 Removal of the Vomeronasal Organ Impairs Reproduction in Male Prairie Voles. KENNEDY S. WEKESA AND JOHN J. LEPRI, *Department of Biology, University of North Carolina at Greensboro.*

P29 #100 c-Fos Expression in Vomeronasal Pathways During Mating Behavior in Male Golden Hamsters. GWEN FERNANDEZ AND MICHAEL MEREDITH, *Program in Neuroscience, Florida State University.*

Olfactory Pathways: Toxicity

P30 #101 HRP Transport from Epithelium to Olfactory Bulb in Rats Treated with 3-Methylindole. ANGELA K. SETZER AND BURTON M. SLOTNICK, The *American University.*

P31 #102 3-Methylinodole Impairs Olfactory Function While Leaving Nasal Trigeminal Chemoreceptors Intact. W.L. SILVER, *Wake Forest University*; S. KHAJENASIR, *University of N. Carolina,* Chapel Hill; C. WIRSIG- WEICHMANN, *Wake Forest University*; T.E. FINGER, *University of Colorado School of Medicine.*

P32 #103 The Effect of 3-Methylindole on Measures of Olfactory Function. LLOYD HASTINGS, DOUGLAS G. KOHLRIESER, JAMES E. EVANS AND MARIAN MILLER, *Department of Environmental Health, University of Cincinnati.*

P33 #104 The Effect of Longlasting Formaldehyde Gas Exposure on the Olfactory Epithelium and on the Olfactory Discrimination Ability in the Ferret. R. APFELBACH, M. REIBENSPIES AND R. SCHMIDT, *University of Tubingen, Department of Zoology, Germany.*

P34 #105 Intranasal Administration of Dopaminergic Agents: Transport to the Central Nervous System. C.C. STAHLBAUM, *University of Pennsylvania;* A. GIOVANNI, *University of Pittsburgh*; R.E. HEIKKILA, *UMDNJ-Robert Wood Johnson Medical School*; R.L. DOTY, *University of Pennsylvania.*

P35 #106 Odorant Specificity in Olfactory Identification Deficits in Aging and Alzheimer's Disease. MICHAEL J. SERBY, *Mount Sinai Medical School*; DAVINA KALKSTEIN, GWENN S. SMITH, *New York University School of Medicine*; AND MICHAEL RUSSELL, *University of California Davis School of Medicine.*

SLIDES

Friday morning - 8:00-12:15 p.m.

Symposium: **From Psychophysics to Consumer Acceptance: A Symposium Honoring the Memory of Professor Rose Marie Pangborn**

Chairperson: **Ann C. Noble**

8:00 #107 Taste Discrimination Testing II: Modification of Thurstonian Modeling. SUSAN TEDJA, RYUICHI NONAKA, MICHAEL O'MAHONY, *Department of Food Science and Technology, University of California, Davis.*

8:15 #108 Taste Discrimination Testing III: Higher Salivary NaCl Levels Reduce Discrimination Between NaCl and Water By Altering Physical Stimulus Strengths. JEANNINE DELWICHE AND MICHAEL O'MAHONEY, *Department of Food Science and Technology, University of California, Davis.*

8:30 #109 Perceptual Integration in Heterogeneous Taste Percepts. H.N.J. SCHIFFERSTEIN AND J.E.R. FRIJTERS, *Department of Food Science, Wageningen Agricultural*

University, The Netherlands.

8:45 #110 PROP Supertasters and the Perception of Sweetness and Bitterness. L.M. BARTOSHUK, K. FAST, T.A. KARRER AND S. MARINO, *Yale University School of Medicine*; R.A. PRICE and D.R. REED, *University of Pennsylvania.*

9:00 #111 Irritation as a Component of Saltiness and Sourness: Effects of Capsaicin Desensitization. MAGDALENA M. GILMORE AND BARRY G. GREEN, *Monell Chemical Senses Center*

.9:15 #112 Interactions Among Salivary Flow Rate, Sample Composition and Perception of Sweetness, Sourness and Fruitiness. S. BONNANS AND A.C. NOBLE, *University of California, Davis.*

9:30 #113 The Influence of Stimulus Context and Instructional Set on Odor-Induced Enhancement of Taste. ROBERT A. FRANK AND NICOLETTE VAN DER KLAAUW, *University of Cincinnati.*

9:45 #114 Unexpected Congruence in Odor Quality and Intensity Ratings. HARRY LAWLESS, *Cornell University.*

10:00 Refreshment Break

10:30 #115 Switch and Bait: Probing the Basis for Errors of Odor Identification. WILLIAM S. CAIN AND BONNIE POTTS, *J.B. Pierce Laboratory and Yale University.*

10:45 #116 Role of Temporal Coding in the Perception of Odour Mixtures. DAVID G. LAING, *University of Western Sydney, Australia*; ANDREW EDDY, GEOFFREY W. FRANCIS *CSIRO Division of Food Processing, Australia*; AND LINDA STEPHENS, *CSIRO Biometrics Unit, Australia.*

11:00 #117 Does Descriptive Analysis of Vanilla Samples by Two Independently Trained Panels Provide Similar Results? HILDEGARDE HEYMANN, *University of Missouri.*

11:15 #118 Perception of Fat Content: Effect of Fat Type and Processing Parameters. D.J. MELA, K.R. LANGLEY AND A. MARTIN, *Department of Consumer Sciences, AFRC Institute of Food Research, United Kingdom.*

11:30 #119 Effects of Sucrose and Aspartame on Hunger, Taste Responsiveness and Energy Intake in Humans. ADAM DREWNOWSKI, *University of Michigan School of Public Health*; JEANINE LOUIS-SYLVESTRE, CHRISTINE MASSIEN, *University of Paris VI*; JACQUES FRICKER, DIDIER CHAPELOT AND MARIAN APFELBAUM, *INSERM U286, Faculte de Medecine X, Paris.*

11:45 #120 Effect of Meal Sensory Properties on Post-Prandial Hunger and Taste Reactivity in Human Subjects. Z.S. WARWICK AND S.S. SCHIFFMAN, *Duke University.*

12:00 #121 Juice and Cookies: Is There a Mutual Compensation of Sweetness? H. TUORILA, L. HYVONEN, *Department of Food Chemistry and Technology, University of Helsinki,* AND L. VAINIO, *Department of Nutrition, University of Helsinki, Finland.*

POSTERS

Friday morning - 8:00-12:30 p.m.

Receptor Cell Structure and Morphology: Olfaction

P1 #122 Ultrastructure of the Nasal Epithelial Surface in Land-Phase Tiger Salamanders (Ambystoma tigrinum). HEATHER L. EISTHEN, *Program in Neural Science* AND DOLORES M. SCHROEDER, *Medical Sciences Program, Indiana University.*

P2 #123 Structural and Enzymatic Processes Facilitating Stimulus Access and Clearance in a Chemosensory System. RICHARD A. GLEESON, HENRY G. TRAPIDO-ROSENTHAL, LORRAINE M. MCDOWELL, HENRY C. ALDRICH AND WILLIAM E.S. CARR, *The Whitney Laboratory and Department of Microbiology and Cell Science, University of Florida.*

P3 #124 Heterogeneity of Membrane Particles in Rapidly-Frozen, Freeze-Fractured Rat Olfactory Cilia Replicated with Tantalum/Tungsten. BERT PH.M. MENCO, *Northwestern University.*

P4 #125 The Chemosensory System of Channel Catfish, Ictalurus punctatus, Following Immersion Exposure to Edwardsiella ictaluri. EDWARD E. MORRISON, *Department of Anatomy and Histology,* AND JOHN A. PLUMB, *Fisheries and Allied Aquacultures, Auburn University.*

P5 #126 The Olfactory Mucosa from Prolarval to Spawning Stages in the Sea Lamprey Petromyzon marinus. JAMIE VANDENBOSSCHE AND BARBARA ZIELINSKI, *Department of Biological Sciences, University of Windsor.*

P6 #127 Ultrastructural Localization of Odorant (AMP) Binding Sites on Olfactory Receptor Cells of the Spiny Lobster, DAVID BLAUSTEIN, MICHELE BURGESS, ROBERT SIMMONS AND CHARLES DERBY, *Georgia State University.*

P7 #128 Naris Closure and Olfactory Bulbectomy Induce P-Glycoprotein-Like Immunoreactivity in Mouse Olfactory Epithelium. JEFF HENEGAR, ERIC WALTERS AND JOEL A. MARUNIAK, *Division of Biological Sciences, University of Missouri-Columbia.*

P8 #129 Patterns of Immunohistochemical Staining for Proliferating Cell Nuclear Antigen (PCNA) Follow Staining Patterns Established with the BrdU Method and Provide an Endogenous Marker for Cell Proliferation Studies of the Adult Mouse Olfactory Epithelium. DAVID S. REASONER AND ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology.*

P9 #130 Immunohistochemical Localization of GTP-Binding Proteins and Neuronal Antigens in the Catfish Olfactory Epithelium. FE C. ABOGADIE AND RICHARD C. BRUCH, *Department of Neurobiology and Physiology, Northwestern University.*

P10 #131 Receptor Neuron Losses Result in Decreased Cytochrome P-450 Immunoreactivity in Associated Non-Neuronal Cells of Mouse Olfactory Mucosa. KAY BUCHHEIT, ERIC WALTERS AND JOEL A. MARUNIAK, *Division of Biological Sciences, University of Missouri.*

P11 #132 Effects of the Interferon-Inducing Agent, Poly(I)-Poly(C) on Cytochrome P- 450 in the Mouse Olfactory Epithelium. ERIC WALTERS AND JOEL A. MARUNIAK, *Division of Biological Sciences, University of Missouri.*

P12 #133 Localization of Fucose Residues in Glycoconjugates of Human Olfactory and Respiratory Mucosae Using Lectinoprobes. K.M. EASTON, CSIRO Division of Food Processing, M.L. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging;* G.A. BELL, *CSIRO Division of Food Processing;* AND T.V. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging, University of Kentucky College of Medicine.*

P13 #134 Expression of Class I MHC-Associated and Virus-Specific Antigens by Bowman's Glands in Infected Olfactory Mucosa. M.L. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging;* G. SHIH, *Department of Physiology and Biophysics;* T.V. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging, Department of Physiology and Biophysics, University of Kentucky College of Medicine.*

Olfaction: Reception and Transduction

P14 #135 Human Olfaction in an Atmosphere of Helium or Nitrogen: Individual and Odorant Variation in the Need for Oxygen. ALEXANDER M. FEIGIN, *Monell Chemical Senses Center;* EDWARD P. ZINKEVICH, *Severtsov Institute of Evolutionary Animal Morphology and Ecology, Russia;* AND CHARLES J. WYSOCKI, *Monell Chemical Senses Center.*

P15 #136 Electrical Responses of Endogenous Receptors in Xenopus Oocytes to Amino Acids. MASAYA ETOH AND KIYONORI YOSHII, *Kyushu Institute of Technology, Japan.*

P16 #137 Further Characterization of the Chemoattractant Binding Site(s) in Vomeronasal (VN) Organ of Garter Snakes. YONGQUAN LUO, SHAJIA LU, PING CHEN, DALTON WANG AND MIMI HALPERN, *Neural and Behavioral Science, SUNY Health Science Center at Brooklyn.*

P17 #138 Diversity and Localization of Putative Olfactory Receptors. RANDALL R. REED, NINA S. LEVY, HEATHER A. BAKALYAR AND ANNE M. CUNNINGHAM, *Howard Hughes Medical Institute, Department of Molecular Biology and Genetics, The Johns Hopkins University School of Medicine.*

P18 #139 Specific Anosmia to Isovaleric Acid is a Peripheral Deficit of Genetic Origin in the C57BL/6J Mouse. HAI-WEI WANG, CHARLES J. WYSOCKI AND GEOFFREY H. GOLD, *Monell Chemical Senses Center.*

P19 #140 Odorant Modification by Olfactory Epithelial Glutathione S-Transferase. NISSIM BEN-ARIE AND DORON LANCET, *Weizmann Institute of Science, Israel.*

P20 #141 Cellular Localization and Molecular Cloning of Phospholipase C Isoenzymes in Rat Olfactory Epithelium. RICHARD C. BRUCH AND FE C. ABOGADIE, *Department of Neurobiology and Physiology, Northwestern University.*

P21 #142 Phosphoinositide-Specific Phospholipase C: Activation by Odors and Feedback Inhibition by Protein Kinase C. LEE-JU CHENG, YING HAR LO AND DENNIS E. RHOADS, *University of Rhode Island.*

P22 #143 G-Protein Dependent Stimulation of Ca2+ Regulated Olfactory Phospholipase C (PLC) by Amino Acids. YING HAR LO, TERENCE M. BRADLEY AND DENNIS E. RHOADS, *University of Rhode Island.*

P23 #144 IP3-Induced Depolarization in Isolated Rat Olfactory Neurons. Y. OKADA, J.H. TEETER AND D. RESTREPO, *Monell Chemical Senses Center.*

P24 #145 Rapid Kinetic Measurements of Second Messenger Formation in Isolated Olfactory Cilia from the Channel Catfish (I. punctatus). DIEGO RESTREPO, *Monell Chemical Senses Center;* INGRID BOEKHOFF, *University of Stuttgart-Hohenheim,* FRG; TAKENORI MIYAMOTO, JOHN H. TEETER, *Monell Chemical Senses Center;* AND HEINZ BREER, *University of Stuttgart-Hohenheim, FRG.*

P25 #146 An InsP3 (Inositol-1,4,5-Trisphosphate) Receptor is Localized to the Ciliary Surface Membrane in Olfactory Sensory Neurons and May Mediate Odorant- Induced Signal Transduction. A.M. CUNNINGHAM, R.R. REED, *Howard Hughes Medical Institute, Department of Molecular Biology and Genetics;* D.K. RYUGO, *H.H.M.I. and Departments of Otolaryngology and Neuroscience;* S.H. SNYDER, *H.H.M.I. and Departments of Neuroscience, Pharmacology and Molecular Sciences and Psychiatry and Behavioral Sciences,* AND G.V. RONNETT, *H.H.M.I. and Department of Neuroscience, Johns Hopkins University.*

P26 #147 Single-channel and Immunochemical Evidence for Inositol 1,4,5-Trisphosphate as a Second Messenger in Lobster Olfactory Neurons, D.A. FADOOL, W.C. MICHEL AND B.W. ACHE, *Whitney Laboratory and Departments of Zoology and Neuroscience, University of Florida.*

P27 #148 cAMP Mediates the Odor-Evoked Inhibitory Conductance in Lobster Olfactory Receptor Cells. W.C. MICHEL, D.A. FADOOL AND B.W. ACHE, *Whitney Laboratory and Departments of Zoology and Neuroscience, University of Florida.*

P28 #149 Properties of Cyclic Nucleotide-Gated Channels in Rat Olfactory Receptor Cells. JOSEPH W. LYNCH AND BERND LINDEMANN, *Physiologie 2, Universitat des Saarlandes, Germany.*

P29 #150 Protein Kinase C Sensitizes Olfactory Adenylate Cyclase. STEPHAN FRINGS AND BERND LINDEMANN, *Physiologie 2, Universitat des Saarlandes, Germany.*

P30 #151 Modulation of Voltage-Gated Ionic Currents in Channel Catfish Olfactory Receptor Neurons. T. IVANOVA AND J. CAPRIO, *Louisiana State University.*

P31 #152 Reduction of Olfactory Neuron Adenylate Cyclase Activity by Bromocriptine In Vitro. BARBARA L. MANIA-FARNELL, RICHARD C. BRUCH AND ALBERT I. FARBMAN, *Department of Neurobiology, Northwestern University.*

P32 #153 Molecular Characterization of Degradative Enzymes Associated with the Olfactory Organ of the Spiny Lobster. HENRY G. TRAPIDO-ROSENTHAL, KARL F. HOFFMANN, MARGARET O. JAMES, JAMES C. NETHERTON, RICHARD A. GLEESON AND WILLIAM E.S. CARR, *Whitney Laboratory, University of Florida.*

P33 #154 Cross-Adaptation of Spiking Responses of Individual Olfactory Receptor Cells of Spiny Lobsters Reveals Multiple Receptor Sites and Shared Excitatory Transduction Processes. JACQUELINE FINE-LEVY, CHARLES DERBY, PETER DANIEL AND M.-N. GIRARDOT, *Georgia State University.*

Olfaction: Receptor Modeling

P34 #155 Towards a Coding Strategy in the Fish Olfactory System. SIGRUN KORSCHING AND HERWIG BAIER. *Max-Planck-Institut fur Entwicklungsbiologie, Tubingen, FRG.*

P35 #156 The Relation Between the Number of Classes of Primary Olfactory Neuron and the Ability to Distinguish the Components of a Mixture. WILLIAM T. NICKELL, *University of Cincinnati.*

P36 #157 A Model to Explore the Relationship Between Olfactory Receptor Cell Specificity and Mitral Cell Response. DAVID A. BERKOWICZ, *Section of Neurobiology, Yale University School of Medicine;* KENSAKU MORI, *Osaka Bioscience Institute, Japan;* AND GORDON M. SHEPHERD, *Section of Neurobiology, Yale University School of Medicine.*

P37 #158 A Computational Model of Adaptation and Disadaptation in Chemoreceptor Cells: Consequences for the Coding of Temporal and Intensity Patterns in Odor Signals. PAUL A. MOORE, *Department of Pharmacology, University of Colorado Health Science Center.*

Friday afternoon - 4:00-6:00 p.m.

Workshop: Teaching the Chemical Senses: From Elementary School to College

Discussants: WAYNE SILVER, CHARLES WYSOCKI AND DAVE HILL

SLIDES

Friday evening - 7:00-10:30 p.m.

Psychophysics: Somatosensory/Trigeminal

Chairperson: Barry G. Green

7:00 #159 Time Course of Electrical Responses and Blood Flow Changes Recorded at the Human Nasal Respiratory Mucosa Induced by Painful Chemical Stimulation. N. THURAUF, T. HUMMEL AND G. KOBAL, *Department of Pharmacology and Toxicology, University of Erlangen-Nurnberg, Germany.*

7:15 #160 Nasal Pungency and Odor from Nonreactive Airborne Chemicals. J. ENRIQUE COMETTO-MUNIZ AND WILLIAM S. CAIN, *John B. Pierce Laboratory and Yale University.*

7:30 #161 Monorhinal Stimulation as a Method for Differentiating Between Thresholds for Irritation and Odor. CHARLES J. WYSOCKI, BARRY G. GREEN AND THOMAS P. MALIA, *Monell Chemical Senses Center.*

7:45 #162 Capsaicin Cross-Desensitization with Zingerone: Evidence that Desensitization is Accelerated by the Removal of Capsaicin. BARRY G. GREEN, *Monell Chemical Senses Center.*

8:00 #163 Rapid Interactions Between Proline-Rich Proteins (PRPs) and 5-Caffeoylquinic Acid (5-CQA): A Spectroscopic Study of Oral Astringency. MARGARA NAISH, *University of Reading;* MICHAEL N. CLIFFORD, *University of Surrey;* AND GORDON G. BIRCH, *University of Reading, United Kingdom.*

8:15 **Refreshment Break**

Animal Behavior: Taste and Olfaction

Chairperson: Heather Duncan

8:30 #164 Y-Chromosomal Influence on Chemosignal Production and Olfactory Discrimination Affecting Urine Marking in Mice. EDWARD MONAHAN AND STEPHEN C. MAXSON, *The University of Connecticut.*

8:45 #165 Individual Discrimination in Hamsters: Sources of Cues and Role of Vomeronasal Organ. ROBERT E. JOHNSTON, *Cornell University.*

9:00 #166 The Effects of a Conditioned Taste Aversion on Gustatory Evoked Activity in Rat NTS Remain After Behavioral Extinction. LAURENCE J. NOLAN AND THOMAS R. SCOTT, *University of Delaware.*

9:15 #167 The Role of Parabrachial Lesions in the Disruption of Conditioned Taste Aversions. P.S. GRIGSON, S. REILLY AND R. NORGREN, *Pennsylvania State University.*

9:30 #168 Sodium Appetite After Chorda Tympani Nerve Transection in Wistar and Fischer 344 Rats. SUZANNE I. SOLLARS AND ILENE L. BERNSTEIN, *University of Washington*

9:45 #169 The Contribution of Anterior Tongue and Nasoincisor Duct Taste Receptors in the Behavioral Responsiveness of the Rat to Sucrose. ALAN C. SPECTOR, *University of Florida*; SUSAN P. TRAVERS, *Ohio State University*; AND RALPH NORGREN, *Pennsylvania State University.*

10:00 #170 Functional Recovery of the Gustatory System Following Peripheral Nerve Crush in the Hamster. M.A. BARRY, D.C. LARSON AND M.E. FRANK, *University of Connecticut Health Center.*

10:15 #171 Sucrose and Polycose Reduce the Salt Intake of Sodium Depleted Rats. SANDRA P. FRANKMANN, JOHN H. DOKKO AND DEBRA A. VELTUNG, *Bourne Laboratory, New York Hospital/Cornell University Medical Center.*

POSTERS

Friday evening - 7:00-10:30 p.m.

Olfactory Receptor Cell Response/Coding

P1 #172 Distribution of Interspike Intervals in the Responses of Pheromone Receptor Neurons of Trichoplusia ni. PAOLA F. BARRONI, ROBERT J. O'CONNELL AND ANGELA M. ZAPATA, *Worcester Foundation for Experimental Biology.*

P2 #173 Detection of Gender-Specific Stimuli by Olfactory Receptor Neurons on the Antenna of Utetheisa ornatrix (Lepidoptera: Arctiidae). ALAN J. GRANT, ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology;* AND THOMAS EISNER, *Section of Neurobiology and Behavior, Cornell University.*

P3 #174 Multiple Classes of Insect OBP Provide a Functional and Developmental Model for Olfactory Specificity. RICHARD G. VOGT, *University of South Carolina.*

P4 #175 Electroantennograms: Computer Analyses of Digitized Waveforms Reveal Differential Characteristics of Receptor Responses to Pheromone Components and Plant Odors. JOSEPH C. DICKENS AND HANS VISSER, *Department of Physiology, Research Institute for Plant Protection, The Netherlands.*

P5 #176 Frequency Coding in Chemoreceptor Cells. GEORGE GOMEZ, RAINER VOIGT AND JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory.*

P6 #177 Tuning Properties of Chemoreceptor Cells on the Antennae of the American Lobster. RAINER VOIGT AND JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory.*

P7 #178 Resistance to Osmotic/Ionic Stress in the Olfactory Receptor Cells of a Euryhaline Crustacean. RICHARD A. GLEESON, *The Whitney Laboratory, University of Florida;* LORRAINE M. McDOWELL, HENRY C. ALDRICH, *Department of Microbiology and Cell Science, University of Florida;* HENRY G. TRAPIDO-ROSENTHAL, *The Whitney Laboratory, University of Florida.*

P8 #179 Depths of Somata in Epithelia Reflect Connectional Status of Most Olfactory Receptor Neurons. PEGGY FARMER, MARIA CROWE, MATTHEW ENNIS, TILAT RIZVI, MICHAEL T. SHIPLEY AND ROBERT C. GESTELAND, *University of Cincinnati College of Medicine.*

P9 #180 Voltage-Sensitive Dyes Report Differential Odor Responses of Olfactory Receptor Neurons. ROBERT C. GESTELAND, JAN N. BROUWER AND PEGGY FARMER, *University of Cincinnati College of Medicine.*

P10 #181 Modulation of Excitability in Frog Olfactory Receptor Neurons (ORNs). RAYMUND Y.K. PUN AND ROBERT C. GESTELAND, *University of Cincinnati College of Medicine.*

P11 #182 Basal Conductance of Frog Olfactory Cilia. STEVEN J. KLEENE, *University of Cincinnati College of Medicine.*

P12 #183 Odorant Responses of Olfactory Receptor Neurons in Dissociated Cell Cutlure: Analysis with Voltage-Sensitive Dyes Combined with Immunocytochemistry. R.J. GRILL, P. FARMER, R.C. GESTELAND AND S.K. PIXLEY, *University of Cincinnati.*

Olfactory Receptor Cell Neurogenesis/Development

P13 #184 Effect of Humidity on the Loss of Olfactory Receptor Neurons in Unilateral Naris Closure Mice. JOEL MARUNIAK AND FRANK COROTTO, *Biological Sciences, University of Missouri.*

P14 #185 The Effect of Age on Olfactory Physiology in Pigeons. M.W. DAHL AND W.L. SILVER, *Department of Biology, Wake Forest University.*

P15 #186 Developmentally Regulated Expression of Olfactory-Specific Genes. TALIA MARGALIT AND DORON LANCET, *Weizmann Institute of Science, Israel.*

P16 #187 In Vitro Neurogenesis and Differentiation of Olfactory Receptor Neurons is Induced by CNS Non-Neuronal Cells. S.K. PIXLEY, *University of Cincinnati.*

Taste: Reception and Transduction

P17 188 Partial Purification of the Hydra Glutathione Chemoreceptor. SUSAN L. BELLIS, G. KASS-SIMON AND DENNIS E. RHOADS, *University of Rhode Island.*

P18 #189 Partial Purification of an L-Arginine Receptor from Catfish Taste Epithelium. D. LYNN KALINOSKI, *Monell Chemical Senses Center;* J.H. TEETER, *Monell Chemical Senses Center and University of Pennsylvania,* AND J.G. BRAND, *Monell Chemical Senses Center, Veterans Affairs Medical Center and University of Pennsylvania.*

P19 190 Localization of PHA-E Lectin Binding (Arginine Receptors?) to Taste Buds on Catfish Barbels. BARBEL BOTTGER AND THOMAS E. FINGER, *University of Colorado Health Science Center and Rocky Mountain Taste and Smell Center.*

P20 #191 Isolation of Miraculin-Binding Proteins from Dorsal Epithelium of Tongue of Rhesus Monkey. MENGSHU WANG, *Monell Chemical Senses Center;* GORAN HELLEKANT, *Department of Veterinary Science, University of Wisconsin;* AND JOSEPH G. BRAND, *Monell Chemical Senses Center.*

P21 #192 Molecular Cloning of Taste Transduction Proteins. NANCY SPICKOFSKY, SUSAN McLAUGHLIN, PETER McKINNON AND ROBERT F. MARGOLSKEE, *Department of Neurosciences, Roche Institute of Molecular Biology.*

P22 #193 Second Messenger Interactions in Taste: Effect of Arachidonic Acid on PIP2- PLC Activity in Catfish Taste Tissue. TAUFIQUL HUQUE, JOSEPH G. BRAND, *Monell Chemical Senses Center;* AND JOSEPH L. RABINOWITZ, *VA Medical Center, Philadelphia.*

P23 #194 In Vitro Uptake of 3H Serotonin in Taste Buds of the Mudpuppy, Necturus maculosus. JOAN WELTON AND STEPHEN ROPER, *Colorado State University and Rocky Mountain Taste and Smell Center.*

P24 #195 Voltage Clamp Studies of the Amilroide-Insensitive Neural Response. QING YE, GERARD L. HECK AND JOHN A. DeSIMONE, *Department of Physiology, Virginia Commonwealth University.*

P25 #196 Ion Transport in Rat Tongue Epithelium: A Developmental Study. A. MARK SETTLES AND SHEELLA MIERSON, *University of Delaware, School of Life and Health Sciences.*

P26 #197 Properties of the Amiloride-Sensitive Salt Taste Sodium Channel. HARRY WMS. HARPER, *Duck Engineering Design, New York.*

P27 #198 Hamster Chorda Tympani Responses to Sodium: Differential Anion Effects in H and N Fibers. BRADLEY G. REHNBERG, BRUCE I. MACKINNON, THOMAS P. HETTINGER AND MARION E. FRANK, *University of Connecticut Health Center.*

P28 #199 Amiloride Suppresses Chorda Tympani Responses to NaCl in C57BL/6J but not 129/J Mice. K.S. GANNON AND R.J. CONTRERAS, *The Florida State University, Program in Neuroscience.*

P29 #200 Stimulation of the Gerbil's Gustatory Receptors by the Super Sweetener Cyanophenyl Methylbenzyl Guanidine Acetic Acid. R. WILLIAMS, L. SOMENERAIN. W. JAKINOVICH, JR., *Department of Biological Sciences, Herbert H. Lehman College and the Graduate School, City University of New York;* J. TINTI AND C. NOFRE, *Universite Claude Bernard, France.*

P30 #201 Multi-Fiber Taste Responses to Binary-Component Stimuli in the Hamster Chorda Tympani. BRADLEY K. FORMAKER AND MARION E. FRANK, *University of Connecticut Health Center*

P31 #202 Astringent Compounds Suppress Taste Responses in Gerbil. SUSAN S. SCHIFFMAN, MARK S. SUGGS AND SIDNEY A. SIMON, *Duke University.*

P32 #203 Functional Regeneration of Glossopharyngeal Nerve Through Micromachined Sieve Electrodes. ROBERT M. BRADLEY, RICHARD H. SMOKE, TAYFUN AKIN AND KHALIL NAJAFI, *Department of Biologic and Materials Sciences, School of Dentistry and Center for Integrated Circuits, College of Engineering, University of Michigan.*

P33 #204 Enhancing Effects of Betaine on Taste Receptors of the Puffer, Fugu pardalis. S. KIYOHARA, *Department of Biology, College of Liberal Arts and Sciences, Kagoshima University, Japan;* H. YONEZAWA, *Department of Chemistry, Faculty of Science, Kagoshima University, Japan;* AND H. HIDAKA, *Faculty of Bioresources, Mie University, Japan.*

Taste Receptor Cell Development

P34 #205 Development of Fungiform Papillae, Taste Buds and Epithelium in the Human Fetus. R. XIAO AND I. MILLER, JR., *Department of Neurobiology and Anatomy, Wake Forest University.*

P35 #206 Immunohistochemical Evidence for the Presence of Amiloride-Sensitive Sodium Channels in the Taste Buds of Sodium-Restricted Rats. ROBERT E. STEWART AND DAVID L. HILL, *University of Virginia.*

P36 #207 Development of Anterior Tongue Taste Buds in Rats Deprived of Dietary NaCl. JESSICA L. CANOS, ROBERT E. STEWART AND DAVID L. HILL, *Department of Psychology, University of Virginia.*

P37 #208 Ultrastructural Correlates of Development in Taste Buds. CYNTHIA CHURCH, *University of Colorado, University of Denver, The Rocky Mountain Taste and Smell Center;* JOHN C. KINNAMON, *University of Denver, The Rocky Mountian Taste and Smell Center.*

SLIDES

Saturday morning - 8:00-11:30 a.m.
Taste: Processes of Transduction
Chairperson: John DeSimone

8:00 #209 Sweet Taste in Two Malagasy Primates. G. HELLEKANT, *University of Wisconsin and Wisconsin Regional Primate Center*; C.M. HLADIK, *Laboratoire D'Ecologie Generale, France*; D. GLASER, *Anthropological Institute, Switzerland*; AND A. TSANG, *University of Wisconsin.*

8:15 #210 Membrane Properties and Transmitter Sensitivity of Merkel-Like Basal Cells in Necturus Taste Buds. RONA J. DELAY, SUE C. KINNAMON AND STEPHEN D.

ROPER, *Colorado State University and the Rocky Mountain Taste and Smell Center.*

8:30 #211 Monosodium Glutamate-Activated Channels in Mouse Taste Epithelial Membranes. J.H. TEETER, *Monell Chemical Senses Center and University of Pennsylvania*; T. KUMAZAWA, *Saitama Institute of Technology, Japan*; AND J.G. BRAND, *Monell Chemical Senses Center.*

8:45 #212 Characterization of Amiloride-Sensitive Na Channels in Isolated Hamster Fungiform Taste Buds. TIMOTHY A. GILBERTSON, STEPHEN D. ROPER AND SUE C. KINNAMON, *Colorado State University and the Rocky Mountain Taste and Smell Center.*

9:00 #213 In Situ Recording From Hamster Taste Cells: Responses to Sweet Stimuli and cAMP. THOMAS A. CUMMINGS AND SUE C. KINNAMON, *Colorado State University and the Rocky Mountain Taste and Smell Center.*

9:15 #214 Enhancement of Sodium-Epithelial Single Channel and Single Fiber Responses in Rat by the Antibiotic, Novobiocin. A.M. FEIGIN, *Monell Chemical Senses Center*; Y. NINOMIYA, *Department of Oral Physiology, Asahi University School of Dentistry;* J.G. BRAND, *Monell Chemical Senses Center, Veterans Affairs Medical Center, University of Pennsylvania;* M. KOMI, B.P. BRYANT, M. WACHOWIAK, *Monell Chemical Senses Center*; AND J.H. TEETER, *Monell Chemical Senses Center and University of Pennsylvania.*

9:30 #215 G-Proteins and P.I. Turnover in Bitter Taste Signal Transduction in Mice. ANDREW I. SPIELMAN, *New York University College of Dentistry*; TAUFIQUL HUQUE, *Monell Chemical Senses Center*; MAGED AYAD, *New York University College of Dentistry;* GLAYDE WHITNEY, *Florida State University*; AND JOSEPH G. BRAND, *Monell Chemical Senses Center.*

9:45 **Refreshment Break**

10:15 #216 Calcium Pumping and Paramecium Chemoresponse: Cloning the Pump Gene and Using Thapsigargin to Distinguish Plasma Membrane and Internal Pumps. NANCY ELWESS, AND JUDITH VAN HOUTEN, *University of Vermont.*

10:30 #217 Gustducin: A Tasteful G-Protein. SUSAN McLAUGHLIN, PETER McKINNON AND ROBERT F. MARGOLSKEE, *Roche Institute of Molecular Biology.*

10:45 #218 Differential Localizations of Two Novel K+-Channels of the Shab Subfamily in the Rat Circumvallate Papilla Epithelium. P.M. HWANG AND S.H. SNYDER, *Department of Neuroscience, Johns Hopkins University School of Medicine.*

11:00 #219 Analysis of the Protein Composition of Whole Mouth Saliva of Inbred and Wild Mice. JOHN L. BEIDLER, *Florida State University.*

11:15 #220 Receptor-Like Binding Sites in Monoclonal Antibodies for Intense Sweet Taste Compounds. JERRY M. ANCHIN AND D. SCOTT LINTHICUM, *Texas A & M University.*

11:30 General Business Meeting

POSTERS

Saturday morning - 8:00-11:30 a.m.

Central Pathways: Taste

P1 #221 Direct Projection of Primary Vagal Gustatory Nucleus to the Oropharyngeal Motoneurons. K.C. DOCKSTADER AND THOMAS E. FINGER, *University of Colorado Health Sciences Center.*

P2 #222 Maintenance of Rat Agranular Insular Cortex In Vitro. T.S. DONTA AND J.A. LONDON, *Department of Biostructure and Function, Center for Neurological Sciences, University of Connecticut Health Center.*

P3 #223 Intracellular Labeling of Neurons in the Secondary Gustatory Nucleus of the Channel Catfish. CHARLES F. LAMB AND THOMAS E. FINGER, *University of Colorado Health Science Center.*

P4 #224 Concentration-Response Functions for Thirty Chemical Stimuli in the Hamster Solitary Nucleus. HEATHER J. DUNCAN AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P5 #225 Differential Effects of Amiloride on Taste Neurons in the Hamster Solitary Nucleus. SARAH C. NUDING AND MARION E. FRANK, *Center for Neurological Sciences and Department of BioStructure and Function, University of Connecticut Health Center.*

P6 #226 The Effects of GABA in the Gustatory Portion of the Hamster NST: A Patch-Clamp Analysis of Cells in a Brainstem Slice. HONGYANG LIU, MICHAEL BEHBEHANI AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P7 #227 Inhibition of Neuronal Responses in the Hamster Gustatory Cortex. R.G. WEHBY AND J.A. LONDON, *Center for Neurological Sciences, Department of BioStructure and Function, University of Connecticut Health Center.*

P8 #228 Excitatory Neuronal Responses in the Hamster Gustatory Cortex. J.A. LONDON AND R.G. WEHBY, *Department of BioStructure and Function, Center for Neurological Sciences, University of Connecticut Health Center.*

P9 #229 Responses of Single Hamster Parabrachial Neurons to Taste Mixtures: Mutual Suppression Between Sucrose and Quinine. MARK B. VOGT AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P10 #230 Influence of Monosodium Glutamate on Responses of Cortical Taste Neurons in Monkey. Y. MIYAOKA AND T.C. PRITCHARD, *Department of Neuroscience and Anatomy, The Pennsylvania State University College of Medicine.*

P11 #231 Cyclic Spontaneous Activity in Taste-Responsive Units in the Parabrachial Pons of the Rat. SCOTT MONROE AND PATRICIA M. DI LORENZO, *SUNY at Binghamton.*

P12 #232 An Investigation of the Mechanisms Responsible for the Intrinsic Firing Pattern of Neurons in the Gustatory Zone of the Nucleus Tractus Solitarius. FABIEN TELL AND ROBERT M. BRADLEY, *Department of Biologic and Materials Sciences, School of Dentistry, University of Michigan.*

P13 #233 In Vitro Patch Clamp Analysis of Substance P Effect on Neurons in the Rostral Nucleus Tractus Solitarius. LIMEI WANG, MICHAEL KING AND ROBERT M. BRADLEY, *Department of Biologic and Materials Sciences, School of Dentistry, University of Michigan.*

P14 #234 The Prenatal Critical Period for Chorda Tympani Terminal Fields in the Rat NTS. ROBIN F. KRIMM AND DAVID L. HILL, *Department of Psychology, University of Virginia.*

P15 #235 Artificial Rearing During Early Postnatal Development Alters the Organization of Gustatory Recipient Zones Within the Nucleus of the Solitary Tract. PHILLIP S. LASITER, *Florida Atlantic University;* AND JAIME DIAZ, *University of Washington.*

P16 #236 Decrease of Discrimination Ability for Sucrose Taste After Bilateral Sectioning of the Greater Superficial Petrosal and the Chorda Tympani Nerve. S. HARADA, H. KOHORIYAMA AND Y. KASAHARA, *Department of Oral Physiology, Kagoshima University Dental School.*

P17 #237 Conditioned Aversion to Lick-Paired Electrical Stimulation of the Nucleus of the Solitary Tract in the Rat. PATRICIA M. DI LORENZO AND GERALD S. HECHT, *SUNY at Binghamton.*

P18 #238 Hypoglossal Neural Activity During Taste-Elicited Rejection Responses in the Awake Rat. L.A. DINARDO AND J.B. TRAVERS, *Ohio State University.*

Clinical Aspects of Chemical Senses

P19 #239 Self-Reported Illness from Chemical Odors in Young Adults Without Clinical Syndromes or Occupational Exposures. IRIS R. BELL, GARY E. SCHWARTZ, JULIE PETERSON AND DIANE AMEND, *University of Arizona.*

P20 #240 Treatment of Olfactory Loss with Amantadine - An Open Label Trial. ALAN R. HIRSCH, *Smell and Taste Treatment and Research Foundation*; AND JACK G. ARANDA, *University of Illinois College of Medicine.*

P21 #241 Phosphatidyl Choline for Olfactory Problems. ALAN R. HIRSCH, *Smell and Taste Research and Treatment Foundation*; AND DARIN D. DOUGHERTY, *University of Illinois at Chicago College of Medicine.*

P22 #242 Subjective Improvements in Smell Dysfunctions: Relationship to Etiology and Olfactory Diagnosis. B.J. COWART, *Monell Chemical Senses Center and Jefferson Medical College;* E. ROBEN, *Monell Chemical Senses Center*; I.M. YOUNG, *Jefferson Medical College*; AND L.D. LOWRY, *Jefferson Medical College.*

P23 #243 The Value of Laboratory Tests in the Nasal Dysfunction Clinic. ALFREDO A. JALOWAYSKI, TERENCE M. DAVIDSON, *UCSD Medical Center, San Diego*; AND CLAIRE MURPHY, *San Diego State University and UCSD Medical Center, San Diego.*

P24 #244 A Comparison of the Forced-Choice Ascending Method and the Up-Down Staircase Method for Olfactory Threshold Determination in a Life-Span Sample. STACY MARKISON, DAYNA WILNITE, *San Diego State University*; TERENCE M. DAVIDSON, ALFREDO A. JALOWAYSKI, *UCSD Medical Center*; and CLAIRE MURPHY, *San Diego State University and UCSD Medical Center.*

P25 #245 Treatment of Olfactory Loss with Amitriptyline. ALAN R. HIRSCH, *Smell and Taste Treatment and Research Foundation*; AND JULIE G. VANDERBILT, *University of Illinois College of Medicine.*

P26 #246 Olfactory Function in Children with Down's Syndrome. DONALD A. McKEOWN, RICHARD L. DOTY, ANDREW MESTER, RICHARD E. FRYE AND IVY SIMS, *Smell and Taste Center, University of Pennsylvania*; DANIEL P. PERL, *Neuropathology Division, Mt. Sinai Medical Center.*

P27 #247 Olfactory Thresholds in Down's Syndrome. RANI NIJJAR, *San Diego State University;* SAMUEL JINICH, *SDSU/UCSD Joint Doctoral Program*; LAURA SPRINGER, *SDSU;* AND CLAIRE MURPHY, *SDSU and UCSD.*

P28 #248 Evaluation of the Chicago Smell Test in a Normal Population. ALAN R. HIRSCH, *Smell and Taste Research and Treatment Foundation*; DANIEL R. CAIN, *University of Illinois.*

P29 #249 Are Weber Ratios for Salty and Sour Stimuli Influenced by Age? LALEH J. RAZANI, STACY MARKISON, *San Diego State University;* MAGDALENA M. GILMORE, *Monell Chemical Senses Center*; TERENCE M. DAVIDSON, ALFREDO A. JALOWAYSKI, *UCSD Medical Center*; AND CLAIRE MURPHY, *San Diego State University and UCSD Medical Center.*

P30 #250 Efficacy of Group Therapy in the Treatment Approach to Chemosensory Disorders. ALAN R. HIRSCH, *Smell and Taste Treatment and Research Foundation*; JONATHAN M. SCOTT, *Michael Reese Hospital;* AND SUSAN H. KOCH, *University of Illinois College of Medicine.*

Multimodal Interactions

P31 #251 Human Odor Perception by Multidimensional Discrimination from Remembered Patterns. M. KENDAL-REED AND D.A. BOOTH, *University of Birmingham, United Kingdom.*

P32 #252 A Comparison of Item and Order Processing in Olfactory and Verbal Short- Term Memory. THERESA WHITE, *Oxford University.*

P33 #253 Investigation of the Relationship Between Olfactory, Visual and Verbal Processing of Odours Using a Suppression Paradigm. JUDITH PERKINS, *University of Ulster at Jordanstown, N. Ireland.*

Chemical Senses and Nutrition

P34 #254 Orthonasal and Retronasal Olfactory Sensitivity and Rated Food Preferences in Elderly Females. VALERIE B. DUFFY, *University of Connecticut, Storrs and John B. Pierce Laboratory*; ANN M. FERRIS, *University of Connecticut, Storrs*; AND WILLIAM S. CAIN, *John B. Pierce Laboratory and Yale University.*

P35 #255 Dietary Complications of Taste and/or Smell Disorders. RICHARD D. MATTES, BEVERLY J. COWART AND DONNA M. KENNY, *Monell Chemical Senses Center*

P36 #256 Changes in Food Cravings Over the Lifespan. MARCIA LEVIN PELCHAT AND CHRISTOPHER BLAKELOCK, *Monell Chemical Senses Center.*

P37 #257 Hedonic Ratings of Sucrose Solutions Before and After Exercise. H.P. BRAMLEY, *Philadelphia College of Osteopathic Medicine;* AND D.E. HORNUNG, *Biology Department, St. Lawrence University.*

P38 #258 Perception and Pleasantness of Sweetened Foods as Related to Diet in Type II Diabetic Males. LISA M. HARTFIEL, BEVERLY J. TEPPER, *Rutgers University*; AND STEPHEN H. SCHNEIDER, *Robert Wood Johnson University Hospital*

Saturday afternoon - 4:00 - 6:00 p.m.

Symposium: Regeneration in the Olfactory System

S1 #259 Overview to the Subject: P.P.C. GRAZIADEI, *Florida State University.*

S2 #260 Reconstitution of the Olfactory Epithelium and Re-Innervation of the Olfactory Bulb After Methyl Bromide Lesions. J.E. SCHWOB, *Department of Anatomy and Cell Biology and the Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse*; S.L. YOUNGENTOB, *Department of Physiology and the Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse.*

S3 #261 Recovery of Mucosal Inherent Activity Patterns Following Methyl Bromide Induced Lesions of the Olfactory Epithelium. S.L. YOUNGENTOB, P.F. KENT, J.E. SCHWOB, M.M. MOZELL AND E. TZOUMAKA, *Departments of Physiology, Anatomy and Cell Biology and the Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse.*

S4 #262 Recovery of Odorant Identification Following Methyl Bromide Induced Lesions of the Olfactory Epithelium. S.L. YOUNGENTOB AND J.E. SCHWOB, *Departments of Physiology, Anatomy and Cell Biology and the Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse.*

S5 #263 Recovery of the Olfactory Epithelium and Functional Reinnervation of the Olfactory Bulb After Nerve Transection. RICHARD M. COSTANZO AND NANCY L. KOSTER, *Department of Physiology, Virginia Commonwealth University, Medical College of Virginia*

.S6 #264 Recovery Mechanisms in the Olfactory System of Vertebrates. PASQUALE P.C. GRAZIADEI, *Department of Biological Sciences, Florida State University.*

SLIDES

Saturday evening - 7:00-10:30 p.m.

Taste and Olfaction: Central Projections

Chairperson: Charles Derby

7:00 #265 In Vitro Patch Clamp Analysis of GABA Effects on Neurons in the Gustatory Zone of the Nucleus Tractus Solitarius. LIMEI WANG AND ROBERT M. BRADLEY, *Department of Biologic and Materials Sciences, School of Dentistry, University of Michigan.*

7:15 #266 NADPH-Diaphorase Activity in the Gustatory Zone of the Nucleus of the Solitary Tract in the Hamster. BARRY J. DAVIS, *University of Alabama at Birmingham.*

7:30 #267 Neuromodulator-Induced 'Switching' Between Swimming and Pheromone- Initiated Courtship Motor Outputs in the Blue Crab. DEBBIE WOOD AND CHARLES DERBY, *Georgia State University.*

7:45 #268 Plasticity of Primary and Secondary Olfactory Projections in Goldfish. J.S. STEWART AND P.C. BRUNJES, *University of Virginia.*

8:00 #269 Functional and Morphological Regeneration of Peripheral and Central Olfactory Structures in Adult Goldfish. H.P. ZIPPEL, *Physiologisches Institut*; AND D.L. MEYER, *Anatomisches Institut, Gottingen, Germany.*

8:15 #270 Tyrosine Hydroxylase Activity and Immunoreactivity Decline Slowly Following Unilateral Naris Closure in Adult Mice. HARRIET BAKER AND KIMBERLY MOREL, *Cornell University Medical College at the Burke Medical Research Institute.*

8:30 #271 Contributions of Neurogenesis and Cell Survival to the Net Loss of Olfactory Bulb Granule Cells that Follows Naris Closure in Adult Mice. FRANK COROTTO, JEFF HENEGAR AND JOEL MARUNIAK, *University of Missouri, Columbia.*

8:45 #272 Morphological Features of Developing Dendrites of Putative Mitral Cells of the Rat Main Olfactory Bulb. SHIGERU TAKAMI AND PASQUALE P.C. GRAZIADEI, *Department of Biological Science, Florida State University.*

9:00 **Refreshment Break**

Taste and Olfaction/Development, Dynamics

Chairperson: Richard Costanzo

9:15 #273 Morphometry and Cellular Dynamics of Denervated Fungiform Taste Buds in the Hamster. SCOTT D. OLIVER, *Math/Science Division, Shawnee State University*; AND MARK C. WHITEHEAD, *Anatomy Division, UCSD, La Jolla.*

9:30 #274 Changes in Distribution of Tenascin Correlate with Gustatory Papilla and Taste Bud Development and Morphogenesis in Fetal Sheep. L.F. HAUS AND C.M. MISTRETTA, *School of Dentistry and Center for Human Growth and Development, University of Michigan.*

9:45 #275 Nerve Growth Factor-Receptor is Exhibited in Non-Gustatory Nerves of the Developing Rat Tongue but is Absent in the Gustatory Nerves. ALBERT I. FARBMAN, JUDITH BUCHHOLZ, *Department of Neurobiology, Northwestern University*; AND JOSEPH-PASCAL MBIENE, *Department of Biology and Materials Sciences, University of Michigan School of Dentistry.*

10:00 #276 Epidermal Growth Factor (EGF) Enhances the Rate of Cell Division in Olfactory Epithelium In Vitro. ALBERT I. FARBMAN, SHUBHIK DUBBURMAN AND JUDITH A. BUCHHOLZ, *Department of Neurobiology, Northwestern University.*

10:15 #277 Olfactory Receptor Neurons Express Luteinizing Hormone Releasing Hormone (LHRH) During Development. ROBERT B. NORGREN, JR., *Division of Neuroscience, Department of Psychiatry, University of Cincinnati*

.POSTERS

Saturday evening - 7:00-10:30 p.m.

Olfactory Psychophysics

P1 #278 Squeeze-Bottle Test Kits for Specific Anosmia: Demonstration and Applications. JOHN E. AMOORE, *Olfacto-Labs.*

P2 #279 A Comparison of Experienced and Naive Subjects for Olfactory Acuity and Variability in Detection Threshold Testing. JAMES B. MELVILLE, *Unilever Research Laboratories.*

P3 #280 Perceptual and Verbal Components of Short-Term Odor Memory. RENE A. DE WIJK, WILLIAM S. CAIN, *John B. Pierce Laboratory and Yale University*; AND FRANK R. SCHAB, *GM Research Laboratories.*

P4 #281 Viewing Time and Liking of Slides in the Presence of Congruent and Incongruent Odors. SUSAN C. KNASKO, *Monell Chemical Senses Center.*

P5 #282 The Effect of Olfactory Stimuli on the Time Spent by Customers in Textile-Department Stores. RONALD R. NIXDORF, ANTON TEERLING AND E.P. KOSTER, *Psychological Laboratory, University Utrecht, The Netherlands.*

P6 #283 A Laboratory Test of the Proustian Phenomenon: Memory for Odors with Emotional and Neutral Associations. JENNIFER J. HUEBNER, BRIAN J. LYMAN AND PAULA T. HERTEL, *Trinity University.*

P7 #284 The Emotional Nature of Odor-Evoked Memories. RACHEL S. HERZ AND GERALD C. CUPCHIK, *University of Toronto.*

P8 #285 Effects of Androstenone Dissolved in Ethanol or Light Mineral Oil on the Assessment of Men by Women Considering Ratings of Pleasantness and Oral Contraception. REGINA E. MAIWORM AND WERNER U. LANGTHALER, *Department of Psychology, University of Munster.*

P9 #286 Individual Differences in the Perceived Intensity and Quality of Specific Odors Following Self- and Cross-Adaptation. ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology*; DAVID A. STEVENS AND LUCIA M. ZOGBY, *Clark University.*

P10 #287 Do Similar-Smelling Odorants Stimulate the Same Olfactory Channels? Evidence from Psychophysical Studies. JOHN D. PIERCE, JR. AND CHARLES J. WYSOCKI, *Monell Chemical Senses Center.*

P11 #288 An Examination of Priming with Odors. FRANK R. SCHAB, *GM Research Laboratories*; AND ROBERT G. CROWDER, *Yale University.*

P12 #289 A Metric for Odorant Hedonics. H.N. WRIGHT, *SUNY Health Science Center.*

P13 #290 Chemosensory Event-Related Potentials (CSERP) in the Investigation of Interactions Between the Olfactory and Somatosensory (Trigeminal) Systems. A. LIVERMORE, *CSIRO Food Research Laboratory, North Ryde, Australia*; T. HUMMEL AND G. KOBAL, *Department of Pharmacology and Toxicology, University of Erlangen-Nurnberg, Germany.*

P14 #291 Conscious and Unconscious Odor Registration in the Elderly. GARY E. SCHWARTZ, *University of Arizona*; KENNETH P. WRIGHT, *Bowling Green State University*; ERNEST H. POLAK AND JEANNE I. SCHWARTZ, *University of Arizona.*

Taste Psychophysics

P15 #292 Effect of the Solvent Polarity on the Sweet Taste of Small Carbohydrates: Sweetness Intensity and Persistence in Ethanol-Water Mixtures. M.O. PORTMANN, S. SERGHAT, M. MATHLOUTHI, *Laboratoire de Chimie- Physique Industrielle, Faculte des Sciences, Universite de Reims*; T. HOOPMAN AND G.G. BIRCH, *Department of Food Science and Technology, University of Reading.*

P16 #293 Solution Properties and Tastes of Maltooligosaccharides. ROSELINA KARIM AND GORDON G. BIRCH, *University of Reading, United Kingdom.*

P17 #294 Failure to Discriminate Chemicals that Elicit A Similar Taste Quality: Glucose vs. Fructose. PAUL A.S. BRESLIN, *Monell Chemical Senses Center;* EDWARD N. PUGH, JR., *University of Pennsylvania*; AND GARY K. BEAUCHAMP, *Monell Chemical Senses Center.*

P18 #295 Thresholds and Preferences for Monosodium Glutamate (MSG) With and Without Inosine-5-Monophosphate (IMP) in Foods for Young and Elderly Subjects. SUSAN S. SCHIFFMAN, ELIZABETH A. SATTELY-MILLER, INGRID A. ZIMMERMAN, BREVICK G. GRAHAM AND ROBERT P. ERICKSON, *Duke University.*

P19 #296 Psychophysical Functions and Taste Quality Profiles for Fifteen Organic and Inorganic Salts. NICOLETTE J. VAN DER KLAAUW, VALERIE BALL AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P20 #297 Effects of Amiloride on Human Taste Responses to NaCl: Time-Intensity and Taste Quality Descriptor Measures. B.P. HALPERN, S.T. KELLING, J. DAVIS, K.M. DORRIES, A. HAQ AND J.S. MELTZER, *Cornell University.*

P21 #298 Anterior Tongue Stimulation with Amiloride Suppresses NaCl Saltiness in Humans. ANN M. TENNISSEN AND BRUCE McCUTCHEON, *State University of New York, Albany.*

P22 #299 Relative Sensitivity to Bitter Tastes: Threshold and Suprathreshold Relationships. Y. YOKOMUKAI, *Monell Chemical Senses Center and Kirin Brewery, Co., Ltd.*; B.J. COWART AND G.K. BEAUCHAMP, *Monell Chemical Senses Center.*

P23 #300 Taste Preference of Bitterness: Relationship Between Preference and Sensitivity. YASUHIRO TSUDA, KAZUKO NAMBA, KEIKO MIZUMA AND MASASHI NAKAGAWA, *Suntory Ltd.*

P24 #301 Perceived Taste Intensity of Bitter Compounds in Mixtures with Sucrose and Sorbitol. SUSAN S. SCHIFFMAN, *Duke University*; LARRY A. GATLIN, *Glaxo Inc.*; BREVICK G. GRAHAM, ELIZABETH A. SATTELY-MILLER, *Duke University*; SHIRLEY A. HEIMAN AND WILLIAM A. STAGNER, *Glaxo Inc.*

P25 #302 Human Thresholds and Suprathreshold Ratings for Sucrose Octaacetate (SOA). J.D. BOUGHTER JR., *Department of Psychology, Florida State University.*

P26 #303 Role of Attention in Taste Sensitivity. KRYSTYNA M. RANKIN, *John B. Pierce Laboratory and Department of Psychology, Stockholm University*; AND LAWRENCE E. MARKS, *John B. Pierce Laboratory and Yale University.*

P27 #304 Effects of 7th Cranial Nerve Anesthesia on Taste. F. CATALANOTTO, Y. LECADRE, M. ROBINSON, *UMDNJ-Dental School;* AND L. BARTOSHUK, *Yale University School of Medicine*

P28 #305 Detection Thresholds for Emulsified Oils in Young and Elderly Subjects. SUSAN S. SCHIFFMAN, BREVICK G. GRAHAM, AARON R. VANCE, KIMBERLI GAILLARD, ZOE S. WARWICK AND ROBERT P. ERICKSON, *Duke University.*

P29 #306 Age-Related Changes in Taste Sensitivity on Localized Regions of the Tongue. TOSHI MATSUDA AND RICHARD L. DOTY, *Smell and Taste Center, University of Pennsylvania.*

P30 #307 A Comparison of the Ability of Japanese and Australians to Discriminate Taste Stimuli. ROBIN GILMORE, DAVID G. LAING, *CSIRO Sensory Research Centre, Australia*; MASAKI YOSHIDA, KAZUMI YAMAZAKI, *Chuo University, Japan*; CATHERINE JAMES, JOHN PRESCOTT AND GRAHAM A. BELL, *CSIRO Sensory Research Centre, Australia.*

Psychophysics: Somatosensory/Trigeminal and Mixtures

P31 #308 Evaluation of the ASTM Pungency Methodology. MARGARET CLIFF AND HILDEGARDE HEYMANN, *University of Missouri-Columbia.*

P32 #309 PROP Status and its Relationship to the Perceived Burn Intensity of Capsaicin at Different Tongue Loci. T.A. KARRER, L.M. BARTOSHUK, *Yale School of Medicine*; E. CONNER, S. FEHRENBAKER, D. GRUBIN AND D. SNOW, *Yale University.*

P33 #310 Taste Intensity, Burn Intensity and Total Intensity in Mixtures of Capsaicin with Sucrose and NaCl. JOHN PRESCOTT, SUZANNE ALLEN, *CSIRO Sensory Research Centre*; AND LINDA STEPHENS, *CSIRO Biometrics Unit, Australia.*

P34 #311 Taste Suppression or Enhancement in Binary Mixtures, Presented Physically Mixed or Separated on the Tongue. CORINNE A. OSSEBAARD AND JAN H.A. KROEZE, *Psychological Laboratory, Utrecht University, The Netherlands.*

P35 #312 Perceived Intensity and Persistence in Heterogeneous Taste Mixtures. A.M. CALVINO, *Cátedra Fisiología, FFyB y Laboratorio de Investigaciones Sensoriales, Argentina.*

SLIDES

Sunday morning - 8:00-12:00 noon

Olfaction: Human Responses and EEG's

Chairperson: Richard Doty

8:00 #313 Topographical EEG Maps of Human Responses to Odors. W.R. KLEMM, S.D. LUTES, D.V. HENDRIX, *Texas A & M University*; AND S. WARRENBURG, *IFF Inc.*

8:15 #314 Topographic EEG Mapping of Conscious and Unconscious Odors. GARY E. SCHWARTZ, *University of Arizona*; KENNETH P. WRIGHT, *Bowling Green State University*; ERNEST H. POLAK, JOHN P. KLINE AND ZIYA DIKMAN, *University of Arizona.*

8:30 #315 EEG Registration of Androstenone in Androstenone Anosmic Subjects. GARY E. SCHWARTZ, JOHN P. KLINE, ZIYA DIKMAN, *University of Arizona*; KENNETH P. WRIGHT, *Bowling Green State University*; AND ERNEST H. POLAK, *University of Arizona.*

8:45 #316 Chemosensory Event-Related Potentials in Patients with Parkinson's Disease. T. HUMMEL, G. KOBAL, *Department of Pharmacology and Toxicology, University of Erlangen-Nurnberg, Germany*; AND T. MOKRUSCH, *Department of Neurology, University of Erlangen-Nurnberg, Germany.*

9:00 #317 Several Nasal Respiratory Rhythms are Associated with Unilateral Olfactory Sensitivity. RICHARD E. FRYE, *Department of Physiology and Biophysics, Georgetown University*; ANGELO VALLE AND RICHARD L. DOTY, *Smell and Taste Center, University of Pennsylvania.*

9:15 #318 Most Olfactory Tests Measure a Common Sensory Domain. RICHARD L. DOTY, RICHARD SMITH, DONALD McKEOWN AND JAYA RAJ, *Smell and Taste Center, University of Pennsylvania.*

9:30 #319 Age Differences in Suprathreshold Taste and Smell Perception. M.W. HEFT, R. O'BRIEN, K. O'BRIEN AND E. HEMP, *CD Pepper Center, University of Florida.*

9:45 **Refreshment Break**

Taste and Olfaction/Cell Structure, Periphery

Chairperson: Inglis Miller

10:15 #320 Tyrosine Hydroxylase- and Dopamine-B-Hydroxylase-Immunoreactive Fibers in the Human Olfactory Mucosa. Y.CHEN, *Division of Otolaryngology, Department of Surgery;* M.L.GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging;* AND T.V. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging, Department of Physiology and Biophysics, University of Kentucky College of Medicine.*

10:30 #321 Localization of Two Isozymes of Cytochrome P450 in Human and Rat Nasal Mucosae. Y.CHEN, *Division of Otolaryngology, Department of Surgery;* M.L. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging;* X. DING, *Department of Biological Chemistry, University of Michigan Medical School;* AND T.V. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging, Department of Physiology and Biophysics, University of Kentucky College of Medicine.*

10:45 #322 A Preliminary Study of Ultrastructural Changes in the Olfactory Epithelium of a Rat Model for Alzheimer's Disease. PAMELA M. ELLER, BRUCE W. JAFEK, EDWARD W. JOHNSON, CATHERINE BENNETT AND CHRISTOPHER FILLEY, *University of Colorado Health Sciences Center and The Rocky Mountain Taste and Smell Center*

11:00 #323 Distribution of T Lymphocytes in the Olfactory Mucosae of Virus-Antibody- Free and Conventional Rats. M.L. GETCHELL, *Division of Otolaryngology, Department of Surgery;* G. SHIH, *Department of Physiology and Biophysics;* AND T.V. GETCHELL, *Division of Otolaryngology, Department of Surgery, Sanders-Brown Center on Aging; Department of Physiology and Biophysics, University of Kentucky College of Medicine.*

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11:15 #324 Localization of Glutathione and γ-Glutamyltranspeptidase in the Nasal Mucosae of Rats. N.S. RAMA KRISHNA, *Department of Physiology and Biophysics*; MARILYN L. GETCHELL, *ENT Surgery;* SURESH S. TATE, *Department of Biochemistry, Cornell University Medical College;* FRANK L. MARGOLIS, *Department of Neuroscience, Roche Institute of Molecular Biology*; AND THOMAS V. GETCHELL, *Department of Physiology and Biophysics, ENT Surgery, University of Kentucky College of Medicine.*

11:30 #325 Keratin-Like Immunoreactivity in Taste Cells. BRUCE OAKLEY, ANNE LAWTON AND LIANNA WONG, *Department of Biology, University of Michigan.*

11:45 #326 Variations in Human Fungiform Papillae. I.J. MILLER, JR., D. SINK, R. XIAO AND S. DAVIS, *Department of Neurobiology and Anatomy, Wake Forest University.*