ACHEMS - 1991

PROGRAM

THE THIRTEENTH ANNUAL MEETING OF THE ASSOCIATION FOR CHEMORECEPTION SCIENCES

Hyatt, Sarasota
Florida

April 17-21, 1991

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

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GENERAL INFORMATION

1. Registration:

Wednesday evening: 5:00-7:30pm (in Longboat)

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

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

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. Tickets for the IFF Awards Banquet on Friday evening will be on sale during registration. All members are encouraged to attend.

8. Times for the Clinical Luncheon and the Industrial Function will be announced at the meeting.

9. 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.

10. The Hyatt will provide a cash "Quick-Lunch Sandwich Cart" at the conference center on Thursday morning 11:30-12:00 before the Business Meeting at noon.

Wednesday, April 17, 1991

ASSOCIATION FOR CHEMORECEPTION SCIENCES THIRTEENTH ANNUAL MEETING

12 noon — EXECUTIVE COMMITTEE MEETING

State Room

5:00-7:30 — REGISTRATION

Longboat

5:00 — ORGANIZATIONAL MEETING FOR GRADUATE STUDENTS

Sara Desoto Ballroom

6:30-8:00 — OPENING BUFFET

Prefunction Area

8:00-8:30 — WELCOME, OPENING REMARKS AND PRESENTATION OF AWARDS

Thomas V. Getchell, *President*
Association for Chemoreception Sciences

Hernando Desoto Ballroom

8:30-9:30 — **GIVAUDAN LECTURE**

Lloyd M. Beidler
The Florida State University
Department of Biological Sciences

Hernando Desoto Ballroom

9:30 — SOCIAL RECEPTION AND CASH BAR

Prefunction Area

Thursday, April 18, 1991

7:30 — CONTINENTAL BREAKFAST
Prefunction Area

Thursday morning **SLIDES 8:00 - 11:30**

OLFACTION: Animal Behavior

Chairperson: Burt Slotnick

8:00 #1 Chemoreception in Marine Larvae. RICHARD K. ZIMMER-FAUST, *University of Alabama.*

8:15 #2 Learning to Learn to Match to Sample, XI-CHUN MAY LU AND BURTON M. SLOTNICK, *American University.*

8:30 #3 Odorant Identification in an Animal Model: An Update. S. L. YOUNGENTOB, L. M. MARKERT, T. W. HILL, E. P. MATYAS AND M. M. MOZELL, *SUNY Health Science Center at Syracuse.*

8:45 #4 Conditioned Dopamine Response in the Olfactory Bulb of Young Rats. C. L. KIRSTEIN, F. B. WEIHMULLER, J. F. BRANDT, J. F. MARSHALL AND M. LEON, *University of California, Irvine.*

9:00 #5 Olfactory Learning is Inhibited after Low-Level Formaldehyde Gas Exposure in the Ferret. R. APFELBACH AND M. REIBENSPIES, *University of Tübingen.*

9:15 #6 Sexual Pheromone Activity in Lipids and Other Fractions from Urine of Male Mole Rats. R. A. MENZIES, *University of Haifa,* G. HETH, AND E. NEVO, *University of Haifa, University of S. Florida, and Monell Chemical Senses Center.*

9:30 #7 Effects of Y-Chromosome-Dependent Urinary Chemosignals on Agonistic Behaviors in Mice. EDWARD MONAHAN AND STEPHEN C. MAXSON, *University of Connecticut.*

9:45 #8 Purification and Initial Characterization of a Pre-ovulatory Urinary Pheromone from Female Asian Elephants (Elephas Maximus). L. E. L. RASMUSSEN, *Oregon Graduate Institute,* AND TERRY D. LEE, *Beckmann Research Institute.*

10:00 REFRESHMENT BREAK

Thursday morning **SYMPOSIUM 10:30 - 11:30**

OLFACTORY BIOTRANSFORMATION ENZYMES: TRANSDUCTION AND TOXICOLOGY MERGE

Organizers: Doron Lancet, Johnnye Lewis and Alan Dahl

10:30 #9 Application of Enzyme Histochemistry to Studies of Olfactory Mucosal Toxicity in Laboratory Rats. KEVIN T. MORGAN AND MARC BONNEFOI, *CIIT.*

10:45 #10 Nasal Metabolism of Xenobiotics: Potential Role in Olfaction, Tissue Damage, and Protection. ALAN R. DAHL AND JOHNNYE L. LEWIS, *Inhalation Toxicology Research Institute.*

11:00 #11 Catalytic Properties of Olfactory Cytochrome P-450 and Possible Relevance to Odor Detection. XINXIN DING AND MINOR J. COON, *University of Michigan.*

11:15 #12 Olfactory-specific UDP Glucuronosyl Transferase: Role in Odorant Signal Termination? DORON LANCET, NAAVA RUBINSTEIN AND DANIEL LAZARD, *Weizmann Institute.*

Thursday morning **POSTERS 8:00 - 11:30**

TASTE: Animal Behavior

P1 #13 Effect of Salivary Composition on Ingestive Responses to Tannic Acid in Mice. JOHN I. GLENDINNING, *Florida State University.*

P2 #14 The Effect of Capsaicin on Taste. K. LINDSTRAND AND M. ENSLEN. *Nestec Ltd.*

P3 #15 Polygenic Determination of Quinine Aversion among Mice. G. WHITNEY, D. B. HARDER, J. D. BOUGHTER, JR., AND C. G. CAPELESS, *Florida State University.*

P4 #16 A Behavioral Method for Measuring Sweet Taste in the Laboratory Rat. JAMES C. SMITH AND GWEN B. O'KEEFE, *Florida State University,* AND JOHN D. DAVIS, *University of Illinois.*

P5 #17 Sucrose Intake Behavior is Related to Taste Bud Distribution in Fischer-344 Rats. INGLIS J. MILLER, JR. *Wake Forest University,* AND JAMES C. SMITH, *Florida State University.*

P6 #18 Taste Bud Distribution and Taste Preference among Mice. INGLIS MILLER, JR., *Wake Forest University,* DAVID B. HARDER AND GLAYDE WHITNEY, *Florida State University.*

P7 #19 Intermediate SOA Avoidance Phenotype Suggests Identity of the Mouse Sucrose Octaacetate *(Soa)* and Raffinose Undecaacetate *(Rua)* Taste Loci. D. B. HARDER, C. G. CAPELESS, G. WHITNEY, J. D. BOUGHTER, JR., *Florida State University,* AND E. A. AZEN, University of Wisconsin.

P8 #20 Concentration-Dependent Changes in Appetitive Responsivity to Sucrose and NaCl in Rats with Parabrachial Nucleus Lesions. ALAN C. SPECTOR, *University of Florida,* RALPH NORGREN, *Penn State University,* AND HARVEY J. GRILL *University of Pennsylvania.*

P9 #21 Chorda Tympani Nerve Sectioning and Salt Preference of Preweaning Rats. S. I. SOLLARS, AND I. L. BERNSTEIN, *University of Washington.*

P10 #22 Increases in Salt Taste Preference as Mice Age. GARY K. BEAUCHAMP AND AMY S. FISHER, *Monell Chemical Senses Center.*

P11 #23 Increased Excretion and Intake of NaCl and Water by TTR-ANF Transgenic Mice. R. A. BERNARD, W. R. HARE III AND J. D. FREEMAN, *Michigan State University.*

P12 #24 Transection of Chorda Tympani and Insertion of Stereotaxic Ear Pins Produce Equivalent Deficits in NaCl Sensitivity. HEIKE RENTMEISTER-BRYANT, STACIE SHEELAR, CAROLINE BOLLS AND BURTON M. SLOTNICK, *The American University.*

P13 #25 Conditioned Suppression as a Method of Detecting Taste Thresholds. A. KURT THAW AND JAMES C. SMITH, *Florida State University.*

P14 #26 Behavioral Responses of Channel Catfish to Amino Acids. T. VALENTINCIC, *University of Ljubljana,* S. WEGERT AND J. CAPRIO, *Louisiana State University.*

P15 #27 Designer Peptides and Crustacean Responses. D. RITTSCHOF, R. PETTIS*, R. B. FORWARD, JR., C. HAYS, AND B. W. ERICKSON*, *Duke University and *UNC Chapel Hill.*

P16 #28 Behavioral and Neurophysiological Responses to Taste Stimuli in Hawaiian Fruitflies. CHENGTAO HER AND LINDA M. KENNEDY, *Clark University.*

P17 #29 Chemosensory Inhibition of Feeding Behavior and Initiation of Post-feeding Responses in Hydra. W. GROSVENOR, D. E. RHOADS AND G. KASS-SIMON, *University of Rhode Island.*

OLFACTION: Peripheral Histo- and Biochemistry

P18 #30 Monkey and Human Olfactory Epithelium: A Comparative Study. B. R. TALAMO, W. -H. FENG, M. STOCKMAYER, L. CORK AND J. S. KAUER, *Tufts University Medical School.*

P19 #31 Olfactory Mucosal Changes in Experimental Sinusitis of Rabbit. SEUNG-KYU CHUNG, YUTAKA HANAMURE, MASAHIKO EGAWA, ATSUSHI SAMESHIMA, MASARU OHYAMA, *Kagoshima University.*

P20 #32 Do Microvillar Cells in the Rat Olfactory Epithelium Contain OMP? EDWARD W. JOHNSON, PAMELA M. ELLER, DAVID T. MORAN, BRUCE W. JAFEK, *Rocky Mountain Taste and Smell Center.*

P21 #33 A Monoclonal Antibody, 1F4, Specific for Sustentacular Cell Microvilli within the Olfactory Epithelium. S. K. PIXLEY, *University of Cincinnati,* AND B. PH. M. MENCO, *Northwestern University.*

P22 #34 P-glycoprotein Immunoreactivity in Mouse Olfactory Epithelium. ERIC WALTERS AND JOEL A. MARUNIAK, *University of Missouri-Columbia.*

P23 #35 Ultrastructural Localization of Antibodies to Olfactory Epithelial-Specific Glycoproteins gp^{95}, Olfactomedin, and 9-OE and 5-OE Antigens in the Frog's Olfactory Epithelium. BERT PH. M. MENCO, *Northwestern University.*

P24 #36 Olfactomedin: A Novel Glycoprotein Expressed in Olfactory Neuroepithelium. DAVID A. SNYDER, ANN M. RIVERS, HIROKO YOKOE, *Duke University Medical Center,* BERT PH. M. MENCO, *Northwestern University,* AND ROBERT R. J. ANHOLT, *Duke University Medical Center.*

P25 #37 Glutathione is Localized in Secretory Cells in Rainbow Trout Olfactory Lamellae. S. STARCEVIC, M. AMURUGAM, B. MUTUS, AND B. ZIELINSKI, *University of Windsor.*

P26 #38 Insect Odorant Binding Proteins: Three Classes with Differing Molecular Properties. RICHARD G. VOGT AND MICHAEL R. LERNER, *Yale University School of Medicine.*

P27 #39 Localization of 5'-Ectonucleotidase and Phosphatase Activity Within Olfactory Sensilla of the Spiny Lobster. RICHARD A. GLEESON, LORRAINE M. McDOWELL*, HENRY C. ALDRICH*, HENRY G. TRAPIDO-ROSENTHAL AND WILLIAM E. S. CARR, *Whitney Laboratory and *University of Florida.*

P28 #40 Expression of 5'-Ectonucleotidase and Phosphatase Activity from the Olfactory Organ of the Spiny Lobster in Xenopus Oocytes. HENRY G. TRAPIDO-ROSENTHAL, MOLLY A. HOLMAN, ROBERT M. GREENBERG, RICHARD A. GLEESON, AND WILLIAM E. S. CARR, *Whitney Laboratory.*

P29 #41 Biochemical Characterization of Taurine and AMP Binding Sites in Olfactory Tissue of the Spiny Lobster. HENRY TRAPIDO-ROSENTHAL, *Whitney Laboratory*, CHARLES DERBY AND KIRBY OLSON, *Georgia State University.*

P30 #42 Partial Sequence of a Ligand-gated Channel Receptor from the Lobster Olfactory Organ. TIMOTHY S. MCCLINTOCK, ANDREW P. BYRNES, AND MICHAEL R. LERNER, *Yale University School of Medicine.*

P31 #43 Evidence for Acetylcholine as a Neurotransmitter in Lobster Olfactory Receptor Cells. E. ORONA AND B. W. ACHE, *Whitney Laboratory.*

P32 #44 Biochemical and Behavioral Investigations of the Mechanisms Involved in the Recognition of an Imprinted Odorant by Coho Salmon (*Oncorhynchus kisutch*). ANDREW H. DITTMAN, THOMAS P. QUINN AND DANIEL R. STORM, *University of Washington.*

P33 #45 Cytochrome P-450-like Immunoreactivity in Normal and Naris Closure Mice. KAY BUCHHEIT, ERIC WALTERS AND JOEL MARUNIAK, *University of Missouri-Columbia.*

P34 #46 Interaction of Odorants and Endogenous Substrates with Olfactory Monooxygenases: Possible Role of Cytochrome P-450 in the Maintenance of Steroid and Fatty Acied Homeostasis in Rabbit Olfactory Mucosa. XINXIN DING AND MINOR J. COON, *University of Michigan Medical School.*

P35 #47 G-Proteins and Inositol-phospholipid Metabolism Implicated in Odor Response of Cultured Lobster Olfactory Neurons. D. A. FADOOL, W. C. MICHEL, AND B. W. ACHE, *Whitney Laboratory, and University of Florida.*

P36 #48 Strategies for the Identification and Expression of GTP-Binding Proteins from Olfactory Epithelium. F. C. ABOGADIE AND RICHARD C. BRUCH, *Northwestern University.*

P37 #49 Appearance of the Transduction Proteins GS, Golf and Adenylate Cyclase in the Olfactory Epithelium of Rats Occurs on Different Prenatal Days. BARBARA DAU, BERT PH. M. MENCO, RICHARD C. BRUCH, W. DANHO*, AND ALBERT FARBMAN, *Northwestern University and *Hoffmann-La Roche, Inc.*

P38 #50 Characterization and Purification of Anti-Androstenone Antibodies. PRISCILLA E. M. PURNICK AND BERNARD F. ERLANGER, *Columbia University.*

Thursday 12 noon **BUSINESS MEETING**

Hernando DeSoto Ballroom

Thursday afternoon **MODELLING WORKSHOP 4:00-6:00**
(Appetizers and beer available)

Chairperson: John Kauer

ALAN GELPERIN, *Bell Labs*
MICHAEL MEREDITH, *Florida State University*
GORDON SHEPHERD, *Yale University*
JOEL WHITE, *Tufts-NEMC*

Thursday evening **SLIDES 7:00 - 10:30**

TASTE: Peripheral and Central Physiology (Morley R. Kare Memorial Session)

Chairperson: Joe Brand

7:00 #51 Molecular Cloning of a Human Von Ebner's Gland Protein Homologous to Lipophilic-Ligand Carrier Proteins. HARTWIG SCHMALE, MICHAEL BLÄKER, KAI KOCK, *Universität Hamburg.*

7:15 #52 G-Protein Effectors Alter Binding of Amino Acids to Taste Receptor Binding Sites in Catfish, Ictalurus Punctatus. JOSEPH G. BRAND, DOUGLAS L. BAYLEY, AND D. L. KALONOSKI, *Monell Chemical Senses Center.*

7:30 #53 An Expression System for the Cloning of Taste Receptor Proteins. G. SMUTZER, E. HONDA, D. RESTREPO, L. KALINOSKI, AND J. TEETER, *Monell Chemical Senses Center.*

7:45 #54 Patch-clamp Recordings of Hamster Taste Cells: Effects of Saccharin and cAMP. T. A. CUMMINGS, P. AVENET, S. D. ROPER, AND S. C. KINNAMON, *Colorado State University and Rocky Mountain Taste and Smell Center.*

8:00 #55 Aldosterone Increases Amiloride-Sensitive Sodium Channels in Rat Taste Cells: Implications for Sodium Appetitie. M. SCOTT HERNESS, *The Rockefeller University.*

8:15 #56 The Anion Effect in Na Salt Taste: Evidence for the Shunt Hypothesis. QING YE, GERARD L. HECK, AND JOHN A. DESIMONE, *Virginia Commonwealth University.*

8:30 #57 A Regional Distribution of Amiloride Sensitivity on the Tongue of Rat. BRADLEY K. FORMAKER, *University of Connecticut Health Center*, AND DAVID L. HILL, *University of Virginia.*

8:45 **BREAK**

9:00 #58 Inhibition of the Hamster Chorda Tympani Neural Response to Sucrose, Fructose and Saccharin by Copper Chloride. WALTER E. MYERS, THOMAS P. HETTINGER, AND MARION E. FRANK, *University of Connecticut.*

9:15 #59 Cross-adaptation Experiments among Amino Acids, Carboxylic Acids and their Analogs on Fish Taste. TAKAYUKI MARUI, HIROMI OHTA AND YASUO KASAHARA, *Kagoshima University.*

9:30 #60 On the Question of Basic Tastes (Qualities). GÖRAN HELLEKANT, *University of Wisconsin*, YUZO NINOMIYA, *Asahi University*, AND GRANT DUBOIS, *NutraSweet R&D.*

9:45 #61 CO_2 Sensitive Lingual Nerve Neurons are Differentially Tuned. B. P. BRYANT, M. KOMAI, AND M. WACHOWIAK, *Monell Chemical Senses Center.*

10:00 #62 Organization of the Rostral Division of the Nucleus of the Solitary Tract in the Golden Hamster: Cytochrome Oxidase, NADH Dehydrogenase, and Acetylcholinesterase Histochemistry. M. A. BARRY, C. B. HALSELL, *University of Connecticut Health Center*, M. C. WHITEHEAD, *Ohio State University .*

10:15 #63 In Vitro Whole Cell Recordings from Neurons in Gustatory Zone of Rat Nucleus Tractus Solitarius. ROBERT M. BRADLEY AND ROBERT D. SWEAZEY, *University of Michigan.*

Thursday evening **POSTERS 7:00 - 10:30**

OLFACTION: Human Clinical

P1 #64 Olfactory Testing in Senior Citizen Centers. MICHAEL SERBY, AND PAMELA LARSON, *Mt. Sinai Medical Center.*

P2 #65 The Syndrome of Atmospheric Pressure Sensitive Paroxysmal Unilateral Phantosmia. ALAN R. HIRSCH, *Smell and Taste Treatment and Research Foundation*, S. M. LIEBERMAN, *Rush University*, AND S. E. GAY, *Michael Reese Hospital.*

P3 #66 Decline in Odor Memory Over Time in Alzheimer's Patients. ROBBIE RHODES, BETH SHEFFIELD, SAMUEL JINICH AND CLAIRE MURPHY, *San Diego State University and UCSD Medical Center.*

P4 #67 Odor Familiarity and Odor Recognition Memory in Alzheimer's Patients with Mild, Moderate and Severe Dementia. SAMUEL JINICH AND CLAIRE MURPHY, *San Diego State University and University of California, San Diego.*

P5 #68 Olfactory Deficits in Patients Infected with the Human Immunodeficiency Virus. D. E. HORNUNG, D. A. LEOPOLD, D. C. BLAIR, E. C. CLARK, S. L. YOUNGENTOB, *SUNY Health Science Center, Syracuse.*

P6 #69 Differences Among Patients with Smell Impairment Resulting from Head Trauma, Nasal Disease, or Prior Upper Respiratory Infection. HEATHER J. DUNCAN, ALLEN M. SEIDEN, SEOG I. PAIK, AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P7 #70 Olfactory Mucosal Biopsy in Patients with Congenital Anosmia. SEOG I. PAIK, ALLEN M. SEIDEN, HEATHER J. DUNCAN, AND DAVID V. SMITH, *University of Cincinnati College of Medicine.*

P8 #71 Effects of Unilateral Medial Temporal Lobe Resection on Olfactory Functioning: Pre- vs Postsurgical Comparison. B. A. MARTINEZ, W. S. CAIN, R. A. DE WIJK, D. D. SPENCER, R. NOVELLY, K. J. SASS, *Yale University.*

OLFACTION: Human Psychophysics

P9 #72 The Odorant Confusion Matrix as an Aid to Diagnosis, H. N. WRIGHT, P. R. SHEEHE, D. A. LEOPOLD, *SUNY Health Science Center at Syracuse.*

P10 #73 Compatibility of Odor Discrimination and Odor Identification. RENE A. DE WIJK, AND WILLIAM S. CAIN, *Yale University.*

P11 #74 Perceived Intensity and Similarity in Odor Mixtures. FRANC T. SCHIET, *IFF Inc.*, WILLIAM S. CAIN AND RENE DE WIJK, *Yale University.*

P12 #75 Association of Age and Memory Demands with Odor Intensity Discrimination. JOSEPH A. PAOLILLO, JR., JOSEPH C. STEVENS, AND WILLIAM S. CAIN, *John B. Pierce Foundation.*

P13 #76 Memory for Odors over the course of One Hundred Seconds. FRANK R. SCHAB, *GM Research Labs*, RENE DE WIJK AND WILLIAM S. CAIN, *John B. Pierce Foundation.*

P14 #77 On the Encoding of Odors: Is there a Visual and/or Semantic Component? MAGDALENA M. GILMORE, *Brown University.*

P15 #78 Odor and Emotional Memory: The Role of Sex Differences and Social Factors. RACHEL S. HERZ AND GERALD C. CUPCHIK, *University of Toronto.*

P16 #79 Simple and Complex Task Performance During Exposure to Intermittent Odors. SUSAN C. KNASKO, *Monell Chemical Senses Center.*

P17 #80 Effects of Instruction to Image Odors on Reaction Time. CLAIRE MURPHY, *San Diego State University.*

P18 #81 Olfactory Event-Related Potentials to 1-Butanol: Intensity Effects and Correlation with Odor Threshold. TYLER S. LORIG, AMY C. SAPP, AND JAMIE T. CAMPBELL, *Washington and Lee University.*

P19 #82 The Effects of Different Odorant on the Olfactory Evoked Potential. JAMES D. PRAH, *US EPA and University of North Carolina.*

P20 #83 Development of Microencapsulated Odor Detection Test. MICHAEL SERBY, *Mt. Sinai Medical School*, DAVINA KALKSTEIN, *NYU Medical Center*, AND PAMELA LARSON, *Mt. Sinai Medical School.*

P21 #84 Effects of (-) Menthol on Nasal Patency, Perception of Nasal Patency and Respiratory Behavior. DONALD W. WARREN, AMELIA F. DRAKE, HUI LIU, *UNC at Chapel Hill*, AND JAMES C. WALKER, *R. J. Reynolds.*

P22 #85 Decrease in Human Olfactory Sensitivity to Some Odors Due to Substitution of Air in the Nasal Cavity by Helium. ALEXANDER M. FEIGIN, EDWARD P. ZINKEVICH AND CHARLES J. WYSOCKI, *Monell Chemical Senses Center.*

P23 #86 Stimulus-response Functions in the Peri-threshold Region for Homologous Series of Alcohols in Humans. SHIGERU FURUTA AND RICHARD L. DOTY, *Smell and Taste Center, University of Pennsylvania.*

P24 #87 Smell and Taste Function in the Visually Impaired: Comparison to Trained and Untrained Sighted Subjects. RICHARD S. SMITH, RICHARD L. DOTY, AND GARY A. BURLINGAME, *Smell and Taste Center, University of Pennsylvania.*

P25 #88 The Effect of Ambiant Olfactory Stimuli on the Evaluation of a Common Consumer Product. ALAN R. HIRSCH, *Smell and Taste Treatment and Research Fdn.*, AND S. E. GAY, *Michael Reese Hospital.*

OLFACTORY DEVELOPMENT: Central and Peripheral

P26 #89 A Light Microscopic Survey of the Development of the Olfactory Mucosa in *Macaca nemestrina.* CHERYL SINKEVITCH AND BARBARA S. ZIELINSKI, *University of Windsor.*

P27 #90 Number and Location of Mitotic Cells in the Olfactory Epithelium of Postnatal Rabbits. ROYA ZARRABY AND ESMAIL MEISAMI, *University of Illinois-Urbana,* ROBYN HUDSON AND HANS DISTEL, *Ludwig-Maximilians-Univ.*

P28 #91 [^{3}H] Thymidine Incorporation Results Supports Reduction in the Rate of Basal Cell Proliferation in the Olfactory Epithelium of Developing Hypothyroid Rats. MARK PATERNOSTRO AND ESMAIL MEISAMI, *Univ. of Illinois-Urbana.*

P29 #92 Spatial Patterns of Neurogenesis in the Olfactory Epithelium of the Adult Mouse. THOMAS A. SCHOENFELD, *Clark University,* DAVID A. REASNER AND ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology.*

P30 #93 Unilateral Naris Closure Causes Increased Neurogenesis and Decreased Neuronal Survival in the Olfactory Epithelia of Adult Mice. FRANK COROTTO AND JOEL MARUNIAK, *University of Missouri-Columbia.*

P31 #94 Effects of Unilateral Neonatal Naris Closure on the Olfactory Epithelia of Mice. JOEL MARUNIAK AND JEFF HENEGAR, *University of Missouri-Columbia.*

P32 #95 The Effect of Odor Exposure on the Olfactory Epithelium of the Adult Mouse: Degeneration and Proliferation Following Short-Term Exposure to Filtered or Odorized Air. DAVID S. REASNER AND ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology.*

P33 #96 Stages in the Differentiation of Olfactory Sensory Neurons. JAMES E. SCHWOB, *SUNY Health Science Center, Syracuse.*

P34 #97 Effects of Neonatal Thyroid Deficiency in Rats on the Number and Size of Olfactory Bulb Glomeruli. TIMOTHY SENDERA AND ESMAIL MEISAMI, *University of Illinois-Urbana.*

P35 #98 Early Olfactory Deprivation and Morphometry of Olfactory Glomeruli. A Cytochrome Oxidase Study in Rats. ERWIN THIMM AND ESMAIL MEISAMI, *University of Illinois-Urbana.*

P36 #99 Normal Development of the Olfactory Bulb is Dependent Upon Constant Innervation by Olfactory Axons. JOE HERRERA AND GAIL D. BURD, *University of Arizona.*

P37 #100 Electron Microscopic Observations of Olfactory Axons and Bulbar Neurons during Development. A. G. MONTI GRAZIADEI, R. PEREZ AND P. P. C. GRAZIADEI, *Florida State University.*

P38 #101 Neither CGRP nor the Olfactory Nerve is Necessary for Production of Tyrosine Hydroxylase in the Olfactory Bulb. THOMAS E. FINGER, BÄRBEL BÖTTGER, *University of Colorado School of Medicine,* AND WAYNE L. SILVER, *Wake Forest University.*

P39 #102 NGF Receptors in the Olfactory System. QIZHI GONG, MARY S. BAILEY, MICHAEL T. SHIPLEY, *University of Cincinnati.*

P40 #103 Somatic Spines - Dendritic Spines: Ontogeny and Possible Function. E. WEILER AND R. APFELBACH, *University of Tübingen.*

Friday, April 19, 1991

7:30 CONTINENTAL BREAKFAST
Prefunction Area

Friday morning **SLIDES 8:00 - 12:45**

DEVELOPMENT:Taste and Olfaction

Chairperson: G. Burd

8:00 #105 The Death of Olfactory Sensory Neurons Following Unilateral Bulbectomy is Attended by an Increase in TRPM-2, a Marker of Apoptosis, "programmed cell death". H. G. COON, *NIH, NCI,* E. Y. LEY AND C. M. FULTON, *Brandeis University.*

8:15 #106 Heat Shock Protein HSP70 in Control and Bulbectomized Rat Olfactory Epithelium. VIRGINIA McM. CARR AND ALBERT I. FARBMAN, *Northwestern University.*

8:30 #107 Cell Dynamics in the Olfactory Epithelium. ALAN MACKAY-SIM, *Griffith University,* AND PAUL KITTEL, *University of Adelaide.*

8:45 #108 Localization of D2 Dopamine Receptor Messenger RNA in Primary Olfactory Neurons. MICHAEL T. SHIPLEY, WILLIAM T. NICKELL, ANDREW B. NORMAN, *University of Cincinnati,* AND CHARLES GERFEN, *NIMH.*

9:00 #109 Developmental Changes in Cytochrome Oxidase Staining in the Main and Accessory Olfactory Bulbs of Embryonic and Neonatal Garter Snakes. DAVID A. HOLTZMAN, EVAN GORDON, AND MIMI HALPERN, *SUNY Health Science Center, Brooklyn.*

9:15 #110 Tyrosine Hydroxylase Activity. Immunoreactivity and mRNA Decline in the Aging Rat Olfactory Bulb. HARRIET BAKER AND DONNA STONE, *Cornell University Medical College.*

9:30 #111 Development of the Olfactory Bulb in *Xenopus laevis* Tadpoles and Adults: a Morphological and Quantitative Study. CHRISTINE A. BYRD AND GAIL D. BURD, *University of Arizona.*

9:45 #112 Evidence for the "Early Formation" of Glomeruli in the Developing Mammalian Olfactory Bulb. E. MEISAMI, *University of Illinois at Urbana.*

10:00 #113 Denervation During Development Permanently Alters the Gustatory Epithelium. BRUCE OAKLEY, *University of Michigan.*

10:15 REFRESHMENT BREAK

10:45 #114 A Model of Neural Activity-Dependent Alterations in the Developing Gustatory System: Neuroanatomical, Neurophysiological and Behavioral Changes Associated with Early Dietary Sodium Deprivation. CAMILLE TESSITORE KING, MARK B. VOGT[2], AND DAVILD L. HILL, *University of Virginia and* [2]*University of Cincinnati.*

11:00 #115 Spines are Lost from Neurons in Nucleus of the Solitary Tract during a Developmental Period of Functional Convergence and Complex Afferent Input. C. M. MISTRETTA, S. LABYAK, AND M. WOMBLE, *University of Michigan.*

OLFACTION: Human Psychophysics

Chairperson: Charles Wysocki

11:15 #116 Olfactory Discrimination of Nicotine-Enantiomers by Smokers and Non-Smokers. T. HUMMEL, C. HUMMEL AND G. KOBAL. *University of Erlangen-Nürnberg.*

11:30 #117 Physico-Chemical Basis for the Production of Nasal Pungency in Humans by Non-reactive Chemicals. J. ENRIQUE COMETTO-MUNIZ AND WILLIAM S. CAIN, *Yale University.*

11:45 #118 Effects of Adaptation on Perception of Similar and Dissimilar Odors. J. TODRANK, C. J. WYSOCKI AND G. K. BEAUCHAMP, *Monell Chemical Senses Center.*

12:00 #119 Mutual Corss-Adaptation of the Volatile Steroid Androstenone and a Non-steroid Functional Analog. JOHN D. PIERCE, JR., AND CHARLES J. WYSOCKI, *Monell Chemical Senses Center.*

12:15 #120 The Nasal Cycle: Relationship to Ultradian Rhythms and Unilateral Olfactory Thresholds. RICHARD E. FRYE, *Sensonics, Inc.,* AND RICHARD L DOTY, *University of Pennsylvania.*

12:30 #121 Asymmetric Olfactory Function: Relationship to Handedness, Gender and Nasal Resistance. RICHARD L. DOTY, RICHARD E. FRYE AND PAUL SHAMAN, *University of Pennsylvania.*

Friday Morning **POSTERS 8:00 - 12:45**

OTHER CHEMICAL SENSES

P1 #122 Distribution of Immunoreactive Luteinizing Hormone-Releasing Hormone in the Nasal Epithelium and Ventral Forebrain of Embryonic and Neonatal Prairie Voles. CLARE E. STRITTMATTER, SCOTT A. BURCHETT, JOHN J. LEPRI, *University of North Carolina at Greensboro,* AND CELESTE R. WIRSIG-WEICHMANN, *Wake Forest University.*

P2 #123 Early Vomeronasal Lesions Cause Severe Deficits in Male Hamster Mating Behavior; Relieved, in part, by Intracerebral LHRH Peptides. GWENDOLYN FERNANDEZ, GAY HOWARD AND MICHAEL MEREDITH, *Florida State University.*

P3 #124 Purification and Characterization of a Low Molecular Weight Chemoattractant to Garter Snakes. PING CHEN, DALTON WANG AND MIMI HALPERN, *SUNY Health Science Center at Brooklyn.*

P4 #125 Neural Projections of the Vomeronasal Organ in Voles. SUSAN E. WISE AND JOHN J. LEPRI, *University of North Carolina at Greensboro.*

P5 #126 Trigeminal Chemoreception in the Nasal Cavity of Voles. W. BRANT NIX, JOHN J. LEPRI, *UNC, Greensboro,* AND WAYNE L. SILVER, *Wake Forest University.*

P6 #127 Neuropeptide and Glutamate Receptors Expressed by Trigeminal Sensory Neurons. PATRICK W. MANTYH, CLARK J. ALLEN, MARK E. LABENSKI, *University of Minnesota*, JOHN E. MAGGIO, *Harvard University*, AND STEVEN R. VIGNA, *Duke University*.

OLFACTION: Animal Behavior

P7 #128 Do Fish Sniff? A Novel Mechanism of Olfactory Sampling in Fishes. GABRIELLE NEVITT, *Cornell University*.

P8 #129 Behavioral Discrimination of Binary Mixtures and their Components: Effects of Mixture Interactions on Quality Coding. JACQUELINE FINE-LEVY, AND CHARLES DERBY, *Georgia State University*.

P9 #130 Spatial Information Contained in the 3-dimensional Fine Structure of an Aquatic Odor Plume. PAUL A. MOORE, NAT SCHOLZ, JELLE ATEMA, AND GREG A. GERHARDT, *BUMP and University of Colorado Health Science Center*.

P10 #131 Effect of Flow Velocity on Chemical Signal Dispersal and Hermit Crab Orientation. NAT L. SCHOLZ AND JELLE ATEMA, *Boston University Marine Program*.

P11 #132 Avian Repellents: Towards an Understanding of Taxonomic, Class-specific Repellency. PANKAJ S. SHAH, *Monell Chemical Senses Center*, J. RUSSELL MASON AND LARRY CLARK, *Denver Wildlife Research Center*.

P12 #133 Odors Mediate Social Affiliation and Sexual Receptivity But Not Maternal Behavior in Female Prairie Voles. J. WILLIAMS, S. CARTER, *University of Maryland*, B. KIRKPATRICK, *Maryland Psychiatric Research Center*, AND B. SLOTNICK, *The American University*.

P13 134 Effects of Chemosensory and Physical Stimuli on Oxygen Consumption during Reproductive Activation in Female Voles. RHONDA R. GARDNER, AND JOHN J. LEPRI, *University of North Carolina at Greensboro*.

P14 #135 Chemical Characterization of MHC-Determined Body Odors. HIRONORI TSUCHIYA, KUNIO YAMAZAKI, GARY K. BEAUCHAMP AND ALAN G. SINGER, *Monell Chemical Senses Center*.

P15 #136 Development of Olfactory Exploration in Hamsters Involves "Stretching" but not Breaking the Nest Tether. THOMAS A. SCHOENFELD AND AMY FAFARD. *Clark University*.

P16 #137 Sources of Individual Odors in Golden Hamsters. ROBERT E. JOHNSTON, *Cornell University*.

P17 #138 Effects of Nickel Sulfate Hexahydrate on Tests of Olfactory Function in Rats. JAMES EVANS AND LLOYD HASTINGS, *University of Cincinnati*.

P18 #139 Experience Alters the Neurobehavioral Responses of Rat Pups to Different Odor Concentrations. OSNAT CARMI AND MICHAEL LEON, *University of California, Irvine*.

TASTE PERIPHERY: Physiology and Transduction

P19 #140 Use of Li and Mutants to Classify Chemical Stimuli. J. L. VAN HOUTEN, M. FRANTZ, M. V. WRIGHT, *University of Vermont*.

P 20 #141 Pharmacodynamics and Kinetics of Propanol Actions on Fly Receptor Cell Responses to Sucrose. MATTHEW E. ROGERS AND LINDA M. KENNEDY, *Clark University*.

P21 #142 Electrophysiological Evidence for Synaptic Interaction in Single Peg Sensilla of Scorpion Pectines. D. D. GAFFIN, P. H. BROWNELL, *Oregan State University*, AND J. GÖDDE, *University of Regensburg*.

P22 #143 Changes in Salivary Protein Composition of Isoproterenol Treated Mice. JOHN L. BEIDLER, *Florida State University*.

P23 $144 Analysis of Human Von Ebner's Saliva. A. I. SPIELMAN, S. D'ABUNDO, J. C. LIN, F. CHUIERI, G. TURNER, *New York University College of Dentistry*, AND H. SCHMALE, *University of Hamburg*.

P24 $145 Stereospecific Activation of Stimulus-Gated Cation Conductances in Isolated Catfish Taste Epithelial Membranes. TAKASHI KUMAZAWA, JOHN H. TEETER, JOSEPH G. BRAND, *Monell Chemical Senses Center*.

P25 #146 Patch Clamp Recordings from Cells in Intact Taste Buds in Thin Lingual Slices. ALBERTINO BIGIANI, AND STEPHEN ROPER, *Rocky Mountain Taste and Smell Center*.

P26 #147 Metabolism of Inositol-1,4,5-Trisphosphate in Catfish Gustatory Epithelium. TAUFIQUL HUQUE, JOSEPH G. BRAND AND JOSEPH L. RABINOWITZ, *University of Pennsylvania*.

P27 #148 Rat Taste Epithelial cDNA Library: Molecular Genetic Approach to Taste Transduction. P. M. HWANG AND S. H. SNYDER, *Johns Hopkins University*.

P28 #149 The Effect of Modulators of the Adenylate Cyclase System on Taste Responses in Gerbil. SUSAN S. SCHIFFMAN, LARRY A. GATLIN, MARK S. SUGGS, SHIRLEY A. HEIMAN, WILLIAM C. STAGNER, AND ROBERT P. ERICKSON, *Duke University and Glaxo Inc.*

P29 #150 The Mechanism of Sucrose Octaacetate (Bitter Taste) Signal Transduction. A. I. SPIELMAN, *NYU Coll. of Dentistry*, T. HUQUE, J.G.BRAND, *Monell Chemical Senses Center*, AND G. WHITNEY, *Florida State University*.

P30 #151 *In situ* Recording from Hamster Taste Cells: Responses to Salt, Sweet and Sour. P. AVENET, S. KINNAMON, AND S. ROPER. *Rocky Mountain Taste and Smell Center*.

P31 #152 Regeneration of Rat Glossopharyngeal Nerve Through Sieve Electrodes. ROBERT M. BRADLEY, SUAT GURKAN, BRUCE E. BRADLEY AND KHALIL NAJAFI, *University of Michigan*.

P32 #153 Electrophysiological Responses of the Chorda Tympani Nerve to Bitter and Salt Solutions in Inbred Strains of Mice. K. S. GANNON AND R. J. CONTRERAS, *Florida State University*.

P33 #154 Salt Taste Responses and Paracellular Junction Potentials: The "Anion" Effect Explained. HARRY WMS. HARPER, *Duck Engineering Design.*

P34 #155 Salivary Ions and the Response of the Hamster ChordaTympani Nerve to Taste Stimuli. BRADLEY G. REHNBERG, THOMAS P. HETTINGER, AND MARION E. FRANK. *University of Connecticut Health Center.*

P35 #156 The Effect of Calcium Chloride on the Gerbil's Sucrose-best Gustatory Chorda Tympani Neurons. LATCHMAN SOMENARAIN AND WILLIAM JAKINOVICH, JR., *City University of New York.*

P36 #157 Comparison of Chorda Tympani and Trigeminal Nerve Responses to Astringent Compounds in Rodents. SUSAN S. SCHIFFMAN, SIDNEY A. SIMON, MARK S. SUGGS, ANN L. SOSTMAN, *Duke University.*

P37 #158 Responses of Lingual Trigeminal Nerve and Lingual Epithelia to Hydrophobic Stimuli. A. SOSTMAN, AND S. A. SIMON, *Duke University.*

P38 #159 Structure/Activity Relations of the L-proline Taste Receptor Site in the Channel Catfish. S. WEGERT, B. ANDREWS AND J. CAPRIO, *Louisiana State University.*

Friday afternoon **SYMPOSIUM 4:00 - 6:00**
(Appetizers and beer available)

COMPARISONS BETWEEN INSECT AND VERTEBRATE OLFACTION

Chairperson: T. Christensen

4:00 #160 CHARLES DERBY, *Georgia State University*
4:15 #161 ALAN GELPERIN, *Bell Labs*
4:30 #162 STUART FIRESTEIN, *Yale University*
4:45 #163 JOHN KAUER, *Tufts-NEMC*

Friday evening **IFF BANQUET AND FREEMAN AWARD 7:30**

Hernando Desoto Ballroom

Saturday, April 20, 1991

7:30 CONTINENTAL BREAKFAST
Prefunction Area

Saturday morning **SLIDES 8:00 - 12:30**

OLFACTORY TRANSDUCTION

Chairperson: V. Dionne

8:00 #164 Molecular Mechanisms of Olfactory Signal Transduction. H. BREER, I. BOEKHOFF, J. KRIEGER, K. RAMING, J. STROTMANN AND E. TAREILUS, *University of Stuttgart-Hohenheim.*

8:15 #165 Specialized Forms of G Proteins, Adenylyl Cyclase and Ion Channels Mediate Odor Detection. RANDALL R. REED, HEATHER A. BAKALYAR, RAVINDER S. DHALLAN AND KING-WAI YAU, *Howard Hughes Medical Institute and Johns Hopkins School of Medicine.*

8:30 #166 Dual Activation of a Sex Pheromone Dependent Ion Channel from Insect Olfactory Dendrites by Protein Kinase C and cGMP. F. ZUFALL AND H. HATT, *Physiologisches Institut der TU, Munich.*

8:45 #167 Molecular Cloning and Sequencing of a Candidate Pheromone Receptor Protein from the Silk Moth *Antheraea polyphemus.* RICHARD G. VOGT AND MICHAEL R. LERNER, *Yale University.*

9:00 #168 Odor Induced Single Channel Activity in Membrane Patches from Salamander Olfactory Receptor Neurons. STUART FIRESTEIN, FRANK ZUFALL* AND GORDON M. SHEPHERD, *Yale University and *Physiologiches Institut der TU, Munich.*

9:15 #169 Localization of Transduction to Olfactory Receptor Cilia. GRAEME LOWE AND GEOFFREY H. GOLD, *Monell Chemical Senses Center.*

9:30 #170 Olfactory-Specific Cytochromes P450 (P450olf, P4500lf2) and their Possible Functions in Olfaction. PATRICK NEF AND VINCENT E. DIONNE, *University of California, San Diego.*

9:45 #171 Ultrastructural Localization of the Transduction Apparatus in the Rat's Olfactory Epithelium. BERT PH. M. MENCO, *Northwestern University.*

10:00 REFRESHMENT BREAK

10:30 #172 Stimulus Intensity Filters in Chemoreception: The Transfer Function. RAINER VOIGT, GEORGE GOMEZ, PAUL MOORE AND JELLE ATEMA, *Boston University Marine Program.*

10:45 #173 Effects of Capsaicin on the Negative Mucosal Potential (NMP) Evoked by Chemical Irritants in Rats. G. KOBAL, AND N. THÜRAUF, *University of Erlangen-Nurnberg.*

11:00 #174 Inspiratory and Expiratory Airflow Patterns in a Large Scale Human Nasal Cavity Model. INTAEK HAHN, PETER W. SCHERER, *University of Pennsylvania,* MAXWELL M. MOZELL, *SUNY Health Science Center at Syracuse.*

TASTE: Human Behavior I

Chairperson: Linda Bartoshuk

11:15 #175 Single and Mixed Solution Behavior of Sucrose, Glucose, Fructose and Citric Acid. GORDON G. BIRCH AND ANDREAS PANTELI, *University of Reading.*

11:30 #176 Effect of Salivary Flow Rate on Temporal Perception of Bitterness and Astringency. U. FISCHER, R. B. BOULTON, AND A. C. NOBLE, *University of California, Davis.*

11:45 #177 Foliate Papillae Taste Perception in Humans. F. A. CATALANOTTO, Y. LECADRE, F. DEVONSHIRE AND L. BARTOSHUK, *New Jersey Dental School and Yale University.*

12:00 #178 Peripheral Source of Taste Phantom (i.e. Dysgeusia) Demonstrated by Topical Anesthesia. LINDA M. BARTOSHUK AND JOHN KVETON, *Yale University.*

12:15 #179 Differential Sensitivity of Tongue Areas and Plate to Electrical Stimulation: A Suprathreshold Cross-Model Matching Study. JAMES A. SALATA, JAYA M. RAJ, AND RICHARD L. DOTY, *University of Pennsylvania.*

Saturday morning **POSTERS 8:00 - 12:30**

TASTE: Human Psychophysics

P1 #180 Taste Preference in Parkinson's Disease Patients. L. R. AKEY, S. C. CHEN, S. ROSEN, G. PAULSON, S. P. TRAVERS AND J. B. TRAVERS, *Ohio State University.*

P2 #181 Altered Suprathreshold Quality and Intensity Judgements in Patients with Liver Disease. SHERI SOMMERVILLE, JOAN HAVEY, AND MARK I. FRIEDMAN, *Monell Chemical Senses Center.*

P3 #182 Does Sensory Processing Contribute to the "Personality" of Eating? NICOLETTE VAN DER KLAAUW, GREGORY SCHAFFER AND ROBERT A. FRANK, *University of Cincinnati.*

P4 #183 The Effects of Flavor and Macronutrient Composition on Satiety. JILL JOHNSON, AND ZATA VICKERS, *University of Minnesota.*

P5 #184 Dietary Restraint and Responsiveness to Sensory-based Food Cues. BEVERLY J. TEPPER AND PATRICIA SWALES, *Rutgers University.*

P6 #185 Investigations of Human Taste Response Using Microdrop Stimulation of Fungiform Papillae. ANN M. TENNISSEN, *SUNY Albany.*

P7 #186 Differential Context Effects and Role of Similarity in Taste Perception. KRYSTYNA M. RANKIN, AND LAWRENCE E. MARKS, *Yale University.*

P8 #187 Time-Intensity Studies of the Intensity and Hedonics of Prolonged Gustatory Stimuli. WILLIAM E. LEE III, DENISE M. BARRICK* AND EDWARD S. WELLING, *University of South Florida and *Youngstown State University.*

P9 #188 Oral Capsaicin Desensitization and its Effects on Thermal, Tactile, and Chemical Stimuli. TRACY KARRER, AND LINDA BARTOSHUK, *Yale University.*

P10 #189 Sensory Threshold Evaluated from Dose-response Curves. A. B. MARIN, *Coca-Cola Foods, Inc.*, J. BARNARD, R. A. DARLINGTON, AND T. E. ACREE, *Cornell University.*

P11 #190 PTC/PROP and the Tastes of Milk Products. SUSAN MARINO, LINDA M. BARTOSHUK, JILL MONACO, *Yale University*, JEAN ANN ANLIKER, *University of Connecticut*, DANIELLE REED, *University of Pennsylvania*, AND SALLI DESNOYERS, *Pierce Foundation.*

P12 #191 The Transfer of Alcohol to Human Milk: Sensory Implications. JULIE A. MENNELLA, KIKUE KUBOTA, AND GARY K. BEAUCHAMP, *Monell Chemical Senses Center.*

P13 #192 The Transfer of Alcohol to Human Milk: The Effect on the Recipient Infant. JULIE A. MENNELLA AND GARY K. BEAUCHAMP, *Monell Chemical Senses Center.*

P14 #193 A Test of Flavor Sensitivity. VALERIE B. DUFFY, WILLIAM S. CAIN, JOSEPH C. STEVENS, *Yale University*, AND ANN M. FERRIS, *University of Connecticut.*

P15 #194 Sensitivity to 6-n-propylthiouracil Predicts Hedonic Response to Sucrose. HEATHER LOOY AND HARVEY P. WEINGARTEN, *McMaster University.*

P16 #195 Apparent Specific Volumes and Tastes of Sugars and Polyols. GORDON G. BIRCH, ATALA LOPEZ AND GABRIELA MORINI, *University of Reading.*

P17 #196 The Effect of Sweeteners on Bitter Taste Thresholds. SUSAN S. SCHIFFMAN, LARRY A. GATLIN, ELIZABETH A. SATTELY, BREVICK G. GRAHAM, SHIRLEY A. HEIMAN, WILLIAM C. STAGNER AND ROBERT P. ERICKSON, *Duke University and Glaxo Inc.*

P18 #197 Covariance of Panelist Stimulus Concentration/Response Functions Among Thirteen Sweeteners and Implications Regarding Receptor Multiplicity. G. E. DUBOIS, S. S. SCHIFFMAN, Z. S. WARWICK, S. PECORE, B. BOOTH, D. E. WALTERS, T. CARR, K. GIBES, AND L. BRANDS, *NutraSweet Co. and Duke University.*

P19 #198 Individual Differences in Effects of Mouth Movements on Intensity of Sweetness. DAVID A. STEVENS, *Clark University.*

P20 #199 Cephalic Phase Insulin Release: Relationship to Post-Prandial Insulin and Glucose Levels. KAREN TEFF, RICHARD MATTES, *Monell Chemical Senses Center*, AND KARL ENGELMAN, *Hospital of the University of Pennsylvania.*

P21 #200 Developmental Changes in the Response of Human Infants to Bitter Tastes. J. KAJIURA, B. J. COWART, AND G. K. BEAUCHAMP, *Monell Chemical Senses Center.*

P22 #201 Regional Differences in Sensitivity to Astringent Compounds in the Oral Cavity of Humans. SUSAN S. SCHIFFMAN, SIDNEY A. SIMON, AND BREVICK G. GRAHAM, *Duke University.*

P23 #202 Detection Thresholds of Potassium Salts are Related to the Molar Conductivity of the Anion. SUSAN S. SCHIFFMAN, ALVIN L. CRUMBLISS, ZOE S. WARWICK, *Duke University.*

P24 #203 The Taste, Odor and Flavor Modifying Effects of NaCl and MSG. SARAH E. KEMP AND GARY K. BEAUCHAMP. *Monell Chemical Senses Center.*

P25 #204 Salt Preference in Anglo and Hispanic Preschoolers. RANI NIJJAR, KRISTY STRAITS, JILL SNIFFEN, MAGGIE GILMORE, AND CLAIRE MURPHY, *San Diego State University and UCSD.*

P26 #205 A Cross-Cultural Study of Preferences for Common Tastes. JOHN PRESCOTT, DAVID LAING, GRAHAM BELL, SUZANNE ALLEN, *CSIRO,* MASAAKI YOSHIDA, ROBIN GILLMORE, RIE ISHII, KADZE YAMAZAKE, *Chuo University.*

P27 #206 Learned Food Aversions: A Family Study. RICHARD D. MATTES, *Monell Chemical Senses Center.*

OLFACTION: Peripheral Physiology

P28 #207 Time Course of Adaptation in Moth Pheromone Receptor Neurons. PAOLA F. BORRONI AND ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology.*

P29 #208 Differential Responses from Antennal Sensilla in the Female Arctiid Moth *Utetheisa ornatrix* (Lepidoptera: Arctiidae). ALAN J. GRANT, ROBERT J. O'CONNELL, *Worcester Foundation,* AND THOMAS EISNER, *Cornell University.*

P30 #209 Responses of Three Olfactory Pheromone Specialist Neurons of Male Trichoplusia ni (Hübner) to Six Pheromone Components at Concentrations Emitted by Calling Females. M. S. MAYER, *USDA,ARS, Gainesville.*

P31 #210 Mechanisms of Cumulative and Background Adaptation in Lobster Olfactory Receptor Cells. W. C. MICHEL, M. WACHOWIAK, AND B. W. ACHE, *Whitney Laboratory and University of Florida.*

P32 #211 Calcium-Related Conductances in Frog Olfactory Receptor Neurons. STEVEN J. KLEENE, RAYMUND Y. K. PUN, AND ROBERT C. GESTELAND. *University of Cincinnati.*

P33 #212 Voltage-Sensitive Dye Confocal Microscopy of Living Olfactory Epithelia. JAN N. BROUWER, PEGGY FARMER AND ROBERT C. GESTELAND. *University of Cincinnati,* AND JUDY DRAZBA, *NINDS.*

P34 #213 Perireceptor Events: Direct Determination of Diffusion Coefficients in the Olfactory Mucus Layers of Salamanders. MARILYN FRIEDEMANN, PAUL A. MOORE, THOMAS E. FINGER, WAYNE L. SILVER* AND GREG A. GERHARDT, *University of Colorado Health Sciences Center and *Wake Forest University.*

P35 #214 Effects of Unilateral Occlusion of Nasal Cavity on Transport of Cadmium During Inhalation Exposure. LLOYD HASTINGS AND JAMES E. EVANS, *University of Cincinnati.*

Saturday afternoon **SYMPOSIUM 4:00 - 6:00**
(Appetizers and beer available)

UNDERSTANDING BITTERNESS: A COLLECTIVE DISCUSSION

Moderator: Inglis Miller

#215 Chemistry Structure/Activity, RUSSELL ROUSEFF

#216 Transduction Mechanisms, ANDREW SPEILMAN

#217 Neural Coding, MARION FRANK, PAM SCOTT-JOHNSON

#218 Genetics, GLAYDE WHITNEY, LINDA BARTOSHUK

#219 Animal Behavior, JOHN GLENDINNING

#220 Human Psychophysics, ANN NOBLE

Summary/Discussant: Steve Price

Saturday evening **SLIDES 7:00 - 10:15**

OLFACTION: Human, Clinical

Chairperson: William Cain

7:00 #221 Olfactory Competence Over the Life Span. JOSEPH C. STEVENS, INGRID J. JOHNSTON, CONNIE M. NICKOU, AMY M. RUTHRUFF, AND WILLIAM S. CAIN, *John. B. Pierce Foundation.*

7:15 #222 Aging, Olfaction and Food Preferences. MARCIA LEVIN PELCHAT, *Monell Chemical Senses Center,* AND CARYN STOESS, *University of Oregon.*

7:30 #223 Abnormal Olfactory Epithelium in Biopsies of Alzheimer's Patients. BRUCE W. JAFEK, CHRISTOPHER M. FILLEY, PAMELA M. ELLER, MARY M. CHAPMAN, EDWARD W. JOHNSON, DAVID T. MORAN, *Rocky Mountain Taste and Smell Center.*

7:45 #224 Olfactory Function in Progressive Supranuclear Palsy: An Index for Differential Diagnosis from Parkinson's Disease. RICHARD L. DOTY, LARRY I. GOLBE, CHRIS M. LEHRACH, MATTHEW B. STERN, STEVE M. GOLLOMP AND HOWARD W. HURTIG, *University of Pennsylvania and Robert Wood Johnson School of Medicine.*

8:00 #225 Post-Traumatic Dysosmia: Central vs. Peripheral. ALAN R. HIRSCH AND JOSEPH P. WYSE, *Smell and Taste Treatment and Research Foundation.*

8:15 #226 Comorbidity of Psychiatric and Chemosensory Disorders. ALAN R. HIRSCH, *Smell and Taste Treatment & Research Foundation,* AND THOMAS J. TRANNEL, *University of Illinois.*

8:30 BREAK

TASTE: Human Behavior II

Chairperson: David V. Smith

8:45 #227 Taste Decisions: No Differences in Speed or Consistency of Sweet or Sour Rejection. JOHN D. DELCONTE, STEVEN T. KELLING, BRUCE P. HALPERN, *Cornell University.*

9:00 #228 Effects of Metabolic State Changes on Sweet Taste Reactivity in Rats and Humans. HARVEY P. WEINGARTEN AND HEATHER LOOY, *McMaster University.*

9:15 #229 Capsaicin Cross-Desensitization: Psychophysical Evidence of Sensory Complexity in Oral Chemical Irritation. BARRY G. GREEN, *Monell Chemical Senses Center.*

9:30 #230 Sensory Evaluation of Acids by Free-Choice Profiling. SONIA M. RUBICO AND MINA R. MCDANIEL, *Oregon State University.*

9:45 #231 Taste Intensity Perception in Human Aging: Preliminary Longitudinal Results Confirm Earlier Cross Sectional Findings. JAMES M. WEIFFENBACH, *NIH.*

10:00 #232 Taste-Odor Similarities Predict Taste Enhancement and Suppression in Taste-Odor Mixtures. ROBERT A. FRANK, GREGORY SHAFFER AND DAVID V. SMITH, *University of Cincinnati.*

Saturday evening **POSTERS 7:00 - 10:15**

TASTE: Peripheral Anatomy, Biochemistry, Development

P1 #233 Characterization of Gastropod Salivary Gland Enzymes that Generate Hermit Crab Attractant Peptides. RENEE LUCAS, *Ohio Wesleyan College,* AND DAN RITTSCHOF, *Duke University.*

P2 #234 Localization of Putative Chemosensory Cells in the Gut of the Catfish, *Ictalurus punctatus.* L. E. GOEHLER, *University of Colorado Health Sciences Center.*

P3 #235 Tachykinins in the Taste Papillae. A. LUTS, F. SUNDLER, K. LINDSTRAND, AND E. THEODORSSON, *Nestec Ltd.*

P4 #236 Localization of Binding Sites for Epidermal Growth Factor (EGF) in Taste Buds of Neonatal and Adult Rats. ROBERT E. STEWART AND DAVID L. HILL, *University of Virginia.*

P5 #237 Localization of Endopeptidase-24.11-like Immunoreactivity in Rodent Taste Buds and Olfactory Epithelium. ROBERT S. LASHER, *University of Colorado Medical School.*

P6 #238 Comparison of High-Pressure Rapid Freezing Fixation and Conventional Chemical Fixation of Catfish Barbel Taste Buds. SUZANNE M. ROYER AND JOHN C. KINNAMON, *University of Colorado and Rocky Mountain Taste and Smell Center.*

P7 #239 Solitary Chemosensory Cells of the Rockling Anterior Dorsal Fin: High Voltage Electron Microscopy. 3-Dimensional Reconstruction and DiI Labeling of Primary Afferent Nerves. KURT KOTRSCHAL, *Konrad Lorenz Forschungsstelle fur Ethologie,* SUZANNE M. ROYER AND JOHN C. KINNAMON, *University of Colorado and Rocky Mountain Taste and Smell Center.*

P8 #240 Effects of Thyroid Hormones on Vallate Taste Buds. RUOYU XIAO, SIWEI WANG AND INGLIS J. MILLER, *Wake Forest University.*

P9 #241 Developmental Forms of NCAM on Rat Circumvallate Taste Cells. GINA M. NELSON AND THOMAS E. FINGER, *Rocky Mountain Taste and Smell Center.*

P10 #242 Reorganization of Gustatory Recipient Zones in the Nucleus of the Solitary Tract (NST) Following Early Postnatal Receptor Damage: Evidence for Competitive Interactions Between Gustatory Axons During Postnatal Development. PHILLIP S. LASITER, *Florida Atlantic University.*

TASTE: Central Anatomy and Physiology

P11 #243 Glutamate is NOT the Neurotransmitter of Primary Gustatory Afferent Fibers. K. C. DOCKSTADER, T. V. DUNWIDDIE AND T. E. FINGER, *University of Colorado Health Sciences Center.*

P12 #244 Cortical Projections to the Rostral Pole of the Hamster NTS Exhibit Bilateral Differences in Strength and Area of Origin. THEODORE S. DONTA AND JILL A. LONDON, *University of Connecticut Health Center.*

P13 #245 Morphology of Rostrally-projecting NST Neurons Demonstrated by Intracellular Injection of Lucifer Yellow in Fixed Brain Slices. THERESA A. HARRISON, *Medical College of Georgia.*

P14 #246 Morphological Characteristics of Neurons in Areas of the Solitary Nucleus Receiving Chemosensory and Mechanical Information from the Epiglottis. ROBERT D. SWEAZEY, *University of Michigan.*

P15 #247 Distribution of Synapses on HRP-Filled NST-PBN Projection Neurons in the Golden Hamster. MARK C. WHITEHEAD AND DANE E. BOWEN, *Ohio State University.*

P16 #248 Taste Responses in Units in the Nucleus of the Solitary Tract that Do and Do Not Relay Information to the Parabrachial Pons. S. MONROE AND P. M. DI LORENZO, *SUNY Binghamton.*

P17 #249 Interspike Interval patterns Recorded from Taste Neurons in the Hamster Solitary Nucleus. SARAH C. NUDING AND MARION E. FRANK. *University of Connecticut Health Center.*

P18 #250 Ascending Efferents of the Parabrachial Nucleus in the Golden Hamster. C. B. HALSELL AND M. E. FRANK, *University of Connecticut Health Center.*

P19 #251 Taste Mixture Interactions Revealed by Concentration-Response Functions in Single Hamster Parabrachial Neurons. MARK B. VOGT, AND DAVID V. SMITH, *University of Cincinnati.*

OLFACTION: Central Anatomy and Physiology

P20 #252 Morphology and Cytoarchitecture of the Elasmobranch Olfactory Bulb. LAURENCE DRYER AND PASQUALE P. C. GRAZIADEI, *Florida State University.*

P21 #253 Projection Patterns of Goldfish Olfactory System Structures. JEANINE S. STEWART AND PETER C. BRUNJES, *University of Virginia.*

P22 #254 Localization of Growth Factor mRNA Expression in the Rat Olfactory System. KATHLEEN M. GUTHRIE AND CHRISTINE M. GALL. *University of California, Irvine.*

P23 #255 Olfactory System Organization in the Grey, Short-tailed Opossum *Monodelphis domestica.* PETER C. BRUNJES, MARK J. SUTHERLAND AND AMIR A. JAZAERI, *University of Virginia.*

P24 #256 The Olfactory Thalamocortical System: Functional Analysis Using a Split-brain Preparation. SHARON A. MCBRIDE AND BURTON M. SLOTNICK, *The American University.*

P25 #257 A Longitudinal Study of EEG Responses to Odors Using Brain Electrical Activity Mapping (BEM). SUE HOTSON AND STEVE VAN TOLLER, *Warwick Olfaction Research Group.*

P26 #258 Odor Representation on the Olfactory Bulb Surface: Theoretical Analysis of Alternate Models. WILLIAM T. NICKELL, *University of Cincinnati.*

P27 #259 Spatial Distribution of Inhibition During Olfactory Bulb Response to Odor: Computer Simulation. MICHAEL MEREDITH, *Florida State University.*

P28 #260 A Large-scale Computer Model of the Salamander Olfactory Bulb: Responses to Simulated Electrical and Odor Stimulation. J. WHITE, S. N. NEFF, A. CINELLI AND J. S. KAUER, *Tufts NEMC.*

P29 #261 Spatial and Temporal Properties of Facilitation in Optical Responses from the Salamander Olfactory Bulb Evoked by Orthodromic Electric Stimulation. A. R. CINELLI AND J. S. KAUER, *Tufts-NEMC.*

P30 #262 Patch Clamp Recordings in the Salamander Olfactory Bulb. DAVID P. WELLIS AND JOHN S. KAUER, *Tufts-NEMC.*

Sunday, April 21, 1991

7:30 CONTINENTAL BREAKFAST

Prefunction Area

Sunday morning **WORKSHOP 8:00 - 10:00**

DEVELOPMENT OF TASTE SCREENING TESTS

Chairperson: Jack Pearl, *NIH*

Sara Desoto Ballroom

Sunday morning **SLIDES 8:00 - 12 noon**

OLFACTORY AND VOMERONASAL ANATOMY AND PHYSIOLOGY

Chairperson: John Scott

8:00 #263 Coding Reliability of Hydroxy-L-proline Sensitive Chemoreceptor Cells of the Lobster's Lateral Antennule. CARL L. MERRILL, RAINER VOIGT AND JELLE ATEMA, *Boston University Marine Program.*

8:15 #264 Properties of Olfactory Bulb Mitral, Tufted and Periglomerular Neurons Studied by Electrical Stimulation of the Olfactory Nerve Layer. J. W. SCOTT, *D. P. WELLIS, AND B. PRIDDY, *Emory University and *Tufts-NEMC.*

8:30 #265 Metabolic Activity in the Rat and Mouse Olfactory Epithelium and Olfactory Bulb following Odor Stimulation. GRAHAM A. BELL AND JUNNI ZHAN, *CSIRO.*

8:45 #266 Odor Induction of c-fos Expression Reveals Functional Topography in the Rat Main Olfactory Bulb. KATHLEEN M. GUTHRIE, AILEEN ANDERSON, MICHAEL LEON AND CHRISTINE M. GALL, *University of California, Irvine.*

9:00 #267 Development of an N100 Component in the Odorant Evoked Potential of Rats after Repetitive Stimulation. W. JAMES EVANS, AND ARNOLD STARR, *University of California, Irvine.*

9:15 #268 Subcellular Localization of Sialylated Glycoconjugates in Secretory Cells of the Salamander Olfactory Mucosa. JAMES D. FOSTER, MARILYN L. GETCHELL AND THOMAS V. GETCHELL, *University of Kentucky.*

9:30 REFRESHMENT BREAK

10:00 #269 Olfactory Nerves Contain Two Types of Glial Cells, Based on GFAP Immunostaining in Culture and In Situ. S. K. PIXLEY, *University of Cincinnati.*

10:15 #270 Morphological Observations on the Skate Olfactory System. SHIGERU TAKAMI, *CARL A. LUER, AND PASQUALE P. C. GRAZIADEI, *Florida State University and *Mote Marine Laboratory.*

10:30 #271 Calbindin-like Immunoreactivity in the Receptor Cells of the Rat Vomeronasal Organ and in Isolated Cells of the Olfactory Epithelium. EDWARD W. JOHNSON, PAMELA M. ELLER, BRUCE W. JAFEK, *Rocky Mountain Taste and Smell Center.*

10:45 #272 Phylogenetic Distribution of the Vomeronasal System in Aquatic Salamanders. HEATHER L. EISTHEN, DALE R. SENGELAUB AND DOLORES M. SCHROEDER, *Indiana University.*

TASTE: Animal Behavior

11:00 #273 Appetite and Taste Preference for Amino Acid in Growing Rats with Protein Nutrition. K. TORII, *Ajinomoto, Co.,* AND T. ONO, *Toyama University.*

11:15 #274 Sucrose Reduces the Salt Intake of Sodium Deficient Rats. SANDRA P. FRANKMANN, JOHN H. DOKKO, JAMES GIBBS, GERARD P. SMITH AND DEVRA A. VELTUNG, *New York Hospital/ Cornell University Medical Center.*

11:30 #275 Rats Like Calcium Salts. MICHAEL G. TORDOFF, *Monell Chemical Senses Center.*

11:45 #276 Ontogeny vs Phylogeny in Determining Patterns of Chemosensory Mediated Behavior. MARC WEISSBURG, *Marine Environmental Sciences Consortium.*

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