

*ACHEMS - 1994*

*PROGRAM*

*THE SIXTEENTH ANNUAL MEETING  
OF THE  
ASSOCIATION FOR CHEMORECEPTION  
SCIENCES*

*Hyatt, Sarasota  
Florida  
April 13-17, 1994*

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**GENERAL INFORMATION**

1. Registration in the Longboat Room  
Wednesday evening: 5:00-7:00 pm  
Thursday, Friday and Saturday mornings: 7:30-9:00 am  
Thursday evening: 6:00-7:00 pm
2. All slide sessions and workshops will be held in the Sara Desoto Ballroom. 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.
3. All poster sessions will be held in the Hernando Desoto Ballroom. All morning posters should be removed by 3:00 pm. All evening posters should be removed by midnight.
4. The Clinical Luncheon will take place on Thursday at 1:00 pm in the Florida Room. Tickets are on sale in the Conference Office, in the Longboat Room.
5. The Industry/Academia Buffer with cash bar and speaker will take place Friday at 5:00 pm in the Florida Room. Tickets are on sale at the Conference Office, in the Longboat Room.
6. The Wine Tasting will be held in the Florida Room on Saturday at 6:30 pm. Tickets are on sale in the Conference Office, in the Longboat Room.
7. There will be a van from the hotel to Lido Beach, Thursday, Friday and 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.
8. The Hyatt will provide a cask "Quick-Lunch Sandwich Cart" at the conference center daily at 12:30 pm. The Prefunction Area is available for eating your lunch and socializing and meeting other conferees.

*Please see the lists of Symposia and Special Events for more information.*

**Wednesday, April 13, 1994**

**ASSOCIATION FOR CHEMORECEPTION SCIENCES**

**Sixteenth Annual Meeting**

12:00 Noon	Executive Committee Meeting
5:00 – 7:30 pm	Registration
6:30 – 8:00	Opening Buffet
8:00 – 8:30	Welcome, Opening Remarks and Presentation of Awards Inglis Miller, Executive Chairperson
8:30 – 9:30	<b>GIVAUDAN-ROURE LECTURE</b>  Dr. Peter Devreotes Johns Hopkins School of Medicine Baltimore, MD  "Insights into Sensory Transduction from Genetic Analysis of Cell-Cell Communication in <i>Dictyostelium</i> "
9:30	Social Reception and Cash Bar
9:40	Organizational Meeting for Graduate Students (In Lecture Hall, Joel White, Coordinator)

Thursday, April 14, 1994

**SLIDES**

**Thursday Morning – 8:00-12:55**

Growth, Migration and Regeneration in Smell and Taste Systems

*Chairperson: Beverly Cowart*

- 8:00 #1 Age-Related Trends in the Expression of Heat Shock Protein 70 in Human Olfactory Receptor Neurons. THOMAS V. GETCHELL<sup>1,2,3</sup>, N.S. RAMA KRISHNA<sup>1</sup>, NIMRAT DHOOPER<sup>1</sup> and MARILYN L. GETCHELL<sup>2,3</sup>, <sup>1</sup>Dept. of Physiology, <sup>2</sup>Div. of Otolaryngology, Dept. of Surgery, <sup>3</sup>Sanders-Brown Center on Aging, University of Kentucky College of Medicine, Lexington, KY 40536.
- 8:15 #2 Platelet-Derived Growth Factor (PDGF) enhances proliferation of olfactory epithelial cells in organotypic cultures. ALBERTI. FARBMAN and JUDITH A. BUCHHOLZ, Dept. of Neurobiology & Physiology, Northwestern University, Evanston, IL 60208.
- 8:30 #3 Immune Response to Adenotropic Viral Infection Induces Apoptotic Cell Death in Olfactory Receptor Neurons. MARILYN L. GETCHELL, Div. of Otolaryngol. Head & Neck Surg., Dept. of Surgery & Sanders-Brown Center on Aging, University of Kentucky College of Medicine, Lexington, KY 40536.
- 8:45 #4 Taste Bud Cell Dynamics in the Perihatching Chick. DONALD GANCHROW, Tel Aviv University, JUDITH GANCHROW, Hebrew University of Jerusalem and JOHN C. KINNAMON, University of Denver.
- 9:00 #5 Ultrastructure of Rat Circumvallate Taste Buds after Bilateral Denervation of the Glossopharyngeal Nerve. MICHAEL JACOBSON<sup>1,2</sup>, TERRI A. SHERMAN-CROSBY<sup>1,2</sup>, HILDEGARD CROWLEY<sup>1,2</sup>, DEMETRIO QUISPE<sup>1,2</sup>, HEIDI LENNOX<sup>1,2</sup>, BRUCE OAKLEY<sup>3</sup> and JOHN C. KINNAMON<sup>1,2</sup> <sup>1</sup>University of Denver, Denver, CO, <sup>2</sup>Rocky Mountain Taste and Smell Center, Denver, CO, and <sup>3</sup>University of Michigan, Ann Arbor, MI.

Thursday, April 14

- 9:15 #6 Salt Discrimination Before And After Rat Chorda Tympani Regeneration. STEVEN J. ST. JOHN, STACY MARKISON and ALAN C. SPECTOR, Department of Psychology, University of Florida.

- 9:30 #7 Effects of Chorda-Lingual Nerve Repair on Human Taste. J. ZUNIGA, N. CHEN and C. PHILLIPS, Univ. North Carolina.

**Refreshment Break**

Animal Behavior I

*Chairperson: Kunio Yamazaki*

- 10:00 #8 The Vomeronasal System is Differentially Involved in Discrimination of Conspecific Odors in the Brazilian Short-tailed Opossum, *Monodelphis domestica*, Depending on Experience. RISA ROLAND Midwood High School at Brooklyn College LENA SHNAYDER, CHENG-SHU LI and MIMI HALPERN SUNY Health Science Center at Brooklyn, Program in Neural and Behavioral Sciences, 450 Clarkson Ave., Brooklyn, NY 11203.

- 10:15 #9 Exposure of Mice to Androstenone Induces Behavioral Sensitivity to Androstenone. VERA V. VOZNESSENSKAYA, A.N. Severtzov Institute of Evolutionary Animal Morphology and Ecology, Moscow, Russia and CHARLES J. WYSOCKI, Monell Chemical Senses Center, Philadelphia, PA.

- 10:30 #10 Olfactory Responsiveness of Female Goldfish to Sex Pheromones is Enhanced by Exposure to Elevated Levels of Circulating Androgenic Sex Hormones. P.W. SORENSEN and L. BOWDIN, Dept. of Fisheries & Wildlife, Univ. of Minnesota.

**Symposium on Gene Expression in Neuronal Activity**

*Organizers: Kathleen Guthrie and Judith Van Houten*

Thursday, April 14

10:50 #11 S-1 Immediate-Early Genes and Stimulus-Transcription Coupling in the Nervous System. MICHAEL HAYWARD, SHU-CHENG CHEN, TOM CURRAN and JAMES I. MORGAN, *Roche Institute of Molecular Biology, Roche Research Center, Nutley, NJ.*

11:15 #12 S-2 Activity-induced IEG Expression: What Does It Mean for the Cell? STEVEN E. HYMAN, CHRISTINE KONRADI, REBECCA COLE and BARRY KOSOFSKY, *Laboratory of Molecular and Developmental Neuroscience, Massachusetts General Hospital, Harvard Medical School, Boston, MA.*

11:40 #13 S-3 Regulation of FOS/JUN (AP-1)-Activity and AP-1 Dependent Gene Expression In Vivo and in Vitro. SABINE GACK<sup>1</sup>, INGRID HERR<sup>1</sup>, HASN VAN DAM<sup>1</sup>, THOMAS OEHLER<sup>1</sup>, BERND BAUMANN<sup>1</sup>, ULRICH RÜTHER<sup>1</sup> and PETER ANGEL<sup>2</sup>, <sup>1</sup>Kernforschungszentrum Karlsruhe, Institut für Genetik, Karlsruhe, FRG and <sup>2</sup>Medizinische Hochschule Hannover, Institut für Molekularbiologie, Hannover, FRG.

12:05 #14 S-4 Neurotransmitter Control of Gene Expression. JEAN LAUDER, *Dept. of Cell Biology and Anatomy, University of North Carolina School of Medicine, Chapel Hill, NC.*

12:30 #15 S-5 Functional Mapping of Odor-Activated Neurons in Olfactory Bulb. KATHLEEN GUTHRIE and CHRISTINE GALL, *University of California, Irvine, CA.*

#### Thursday Afternoon

1:00 Clinical Luncheon

*Coordinator: April Mott*

3:30-5:30 Minisymposium/Workshop on Taste and Smell Phantoms and Distortions

*Organizer: Jack Pearl*

Thursday, April 14

#16 MS-1

Dysosmia Among Patients at the UCSD Nasal Dysfunction Clinic: Etiology and Effect on Olfactory Function. CARLO QUIÑONEZ, *San Diego State University, TERENCE M. DAVIDSON, ALFREDO A. JALOWAYSKI, UCSD Medical Center, STEVEN NORDIN and CLAIRE MURPHY, UCSD Medical Center and San Diego State University.*

#17 MS-2

Neurorehabilitative Assessment and Treatment of Post-Traumatic Olfactory Dysfunction. NATHAN D. ZASLER, *National NeuroRehabilitative Consortium and RICHARD M. COSTANZO, Virginia Commonwealth University.*

#18 MS-3

Effects of Topical Anesthesia on Dysgeusia and Burning Mouth. JAMES ANDELIN, APRIL E. MOTT and MARION E. FRANK, *University of Connecticut Health Center, Farmington, CT.*

#19 MS-4

Taste Phantoms: Diagnosis Via Topical Anesthetics. L.M. BARTOSHUK, V.B. DUFFY, J. KVETON, *Yale University School of Medicine, F. CATALANOTTO, University of Medicine and Dentistry of New Jersey and J. WEIFFENBACH, National Institute of Dental Research.*

DISCUSSANTS: Phantom Tastes/Smells in Clinical Populations- B.J. COWART; Modifications of Phantoms/Distortions Through Peripheral Agents- C.A. OSSEBARD, D.V. SMITH, A.M. TENNISEN, G.C. BIRCH and M.E. FRANK; Utility of the Confusion Matrix in the Identification and Classification of Phantoms/Distortions- D.B. KURTZ, M.E. FRANK, P. CAIN and M. BARRY

#### POSTERS

#### Thursday morning – 8:00-1:00 pm

*Vomeronasal System*

*Animal Behavior II: Psychophysics, Mating and Feeding Behaviors: Human Infant Feeding Sensory Evaluation and New Technology*

Thursday, April 14

- #20 P1 Membrane Currents in Mammalian Olfactory Epithelium and Vomeronasal Organ Receptor Cells. BRUCE W. MURROW, *University of Colorado Health Sciences Center*, BRUCE W. JAFEK, *University of Colorado Health Sciences Center*.
- #21 P2 Studies on Vomeronasal (VN) Bipolar Neurons. ROBERT L. MOSS, PH.D., *Univ. of TX Southwestern Med. Ctr, Dallas, TX.*
- #22 P3 Vomeronasal Mucosa Expresses Different Sugar Residues in Certain Glycoconjugates than the Olfactory and Septal Mucosae. SHIGERU TAKAMI<sup>1</sup>, MARILYN L. GETCHELL<sup>2,3</sup> and THOMAS V. GETCHELL<sup>1,2,3</sup>, <sup>1</sup>*Department of Physiology*, <sup>2</sup>*Sanders-Brown Center on Aging*, <sup>3</sup>*Division of Otolaryngology-Head and Neck Surgery, Department of Surgery, University of Kentucky College of Medicine, Lexington, KY.*
- #23 P4 Localization of Neutrophils in the Nonsensory Epithelium of the Vomeronasal Organ in Virus-Antibody-Free Rats. ANJALI P. KULKARNI, *Dept. of Physiol. & Biophys., University of Kentucky College of Medicine* and MARILYN L. GETCHELL, *Division of Otolaryngol., Head and Neck Surgery, Department of Surgery, and Sanders-Brown Center on Aging*, Lexington, KY 40536.
- #24 P5 VN Chemoattractant Receptors in Garter Snakes Are Coupled to Multiple G proteins. YONGQUAN LUO, SHAJIA LU, PING CHEN, DALTON WANG and MIMI HALPERN, *Box 8, Program in Neural and Behavioral Science, SUNY Health Sci. Ctr at Brooklyn, 450 Clarkson Ave., Brooklyn, NY 11203.*
- #25 P6 Vapor vs. Liquid Delivery of Chemoattractants to the Olfactory and Vomeronasal Epithelia Results in Different Effects on the Firing Activity of Mitral Cells in the Main and Accessory Olfactory Bulbs of Garter Snakes. CHENG-SHU LI and MIMI HALPERN, *SUNY Health Science Center at Brooklyn, Department of Anatomy and Cell Biology, 450 Clarkson Ave., Brooklyn, NY 11203.*
- #26 P7 Brain *c-fos* Expression Following Electrical Stimulation of the Vomeronasal Organ. GWEN FERNANDEZ-FEWELL and MICHAEL MEREDITH, *Program in Neuroscience, Florida State University, Tallahassee FL 32306-4075.*
- #27 P8 Studies of Compartmentalization in the Developing Accessory Olfactory System. G.A. SCHWARTING, K. YOSHIDA and J.E. CRANDALL, *The Shriver Center, Waltham MA, 02254 and Neuroscience Program, Harvard Med. Sch., Boston, MA 02115.*

Thursday, April 14

- #28 P9 LHRH Neurons Migrate Along an S100-Positive Glial Substrate. D.M. CUMMINGS and P. C. BRUNJES, *University of Virginia.*
- #29 P10 Sexual and Seasonal Differences in the Vomeronasal and Terminal Nerve Systems of Terrestrial Salamanders. ELLEN M. DAWLEY, JAMES CROWDER and PAUL FORLANO, *Ursinus College, Collegeville, PA.*
- #30 P11 Male *Monodelphis domestica* Responses to Estrus-induced Female Odors- A Bioassay for Reproductive Condition. VIRANY HUYNH, *Harvard college, Cambridge, MA 02318* and NAOMIE S. PORAN, *Dept. of Zoology, North Carolina State University, Raleigh, NC 27695-7617.*
- #31 P12 Male Chemical Cues are Processed Differently after Uterine Activation in Female Prairie Voles. MAUREEN L. TUBBIOLA and CHARLES J. WYSOCKI, *Monell Chemical Senses Center, Philadelphia, PA.*
- #32 P13 Quinine Discrimination in Rhesus Monkeys. JENNIFER M. ASPEN, *University of Chicago*, MICHAEL B. GATCH, *Harvard University* and JAMES H. WOODS, *University of Michigan.*
- #33 P14 A Novel Psychophysical Procedure for the Assessment of Bitter Taste Sensitivity in Rats. CARRIE E. PIERCE, CHRISTEN A. CARSON and ROBERT J. CONTRERAS, *Florida State University, Department of Psychology, Tallahassee, Fl., 32306-1051.*
- #34 P15 Short-Term Taste Tests of Sucrose and Saccharin in the Laboratory Rat. JODI RHINEHART-DOTY and JAMES C. SMITH, *Florida State University.*
- #35 P16 Preference for L-Amino Acids in Rats With or Without L-Lysine Deficiency: The Effect of Bilateral Taste Nerve Neurotomy. E. TABUCHI<sup>1</sup>, T. KONDOH<sup>1</sup>, T. ONO<sup>2</sup> and K. TORII<sup>1</sup>, <sup>1</sup>*Torii Nutrient-Stasis Project, ERATO, Research & Development Corp. of Japan;* <sup>2</sup>*Toyama Med. & Pharmaceu. Univ., Japan.*
- #36 P17 The Effects of Gustatory Nerve Section on Concentration-Dependent Licking to Maltose in Rats. RACHEL REDMAN, MIRCEA GARCEA and ALAN C. SPECTOR, *Dept. of Psychology, Univ. of Florida.*

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- #37 P18 Glossopharyngeal Nerve Transection Does Not Compromise Cation Specificity of Depletion-Induced Sodium Appetite in Rats. STACY MARKISON, STEVEN J. ST. JOHN and ALAN C. SPECTOR, *Department of Psychology, University of Florida.*
- #38 P19 The Effect of Thalamic Lesions on Primate Taste Preference. STEVE REILLY and THOMAS C. PRITCHARD, *The Pennsylvania State University, Hershey, PA 17033.*
- #39 P20 The Effects of Methimazole on Olfactory Function. LLOYD HASTINGS, STACEY ANDRINGA and MARIAN L. MILLER, *University of Cincinnati.*
- #40 P21 Conditioned Preferences for Food Odors in Weaning Infants: Preliminary Results. TED MELCER, *San Diego State University* and LISA CAPO, *Murray State University.*
- #41 P22 The Human Infants' Responses to Flavored Milk. JULIE A. MENNELLA, CAROL STALEY, MONICA FIRELY and GARY K. BEAUCHAMP, *Monell Chemical Senses Center, Philadelphia, PA.*
- #42 P23 Temporal Changes in Feeding Patterns Following Peripheral Injections of Bombesin-like Peptides. KURT A. THAW, JAMES C. SMITH, *Florida State University* and JAMES GIBBS, *Cornell University Medical College.*
- #43 P24 The Taste of Sucrose Reduces the Salt Intake of Sodium Deficient Rats Even After a Delay of Six Hours. SANDRA P. FRANKMANN, *University of Southern Colorado* and JOHN H. DOKKO, *Cornell University Medical College.*
- #44 P25 Microstructural Analysis of the Effects of Sucrose Concentration and Food Deprivation on Licking Behavior in the Rat. PERRIN A. KLUMPP and ALAN C. SPECTOR, *Dept. of Psychology, University of Florida.*
- #45 P26 Durability of Conditioned Taste Preferences. JUDITH R. GANCHROW, *Hebrew University, Jerusalem* and J. JAY BRAUN, *Arizona State University.*
- #46 P27 Taste Aversion Conditioned with Exposure to a High Energy Magnet. JAMES C. SMITH, ROSS P. HENDERSON, JODI RHINEHART-DOTY and LISA T. PEGUES, *Florida State University.*

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- #47 P28 The Paradox of Discriminatory Nondiscriminators Revisited. MICHAEL O'MAHONY, JEANNINE DELWICHE, RIE ISHII and SUSUMU MASUOKA, *Dept. of Food Science & Technology, University of California, Davis.*
- #48 P29 Creaminess Perception. E.A. SKIBBA, *University of Missouri-Columbia* and H. HEYMANN, *University of Missouri-Columbia.*
- #49 P30 Ultrathin Flexible Endscopy of the Human Olfactory Cleft. DOLNAL LEOPOLD, *Johns Hopkins Medical Institutions.*
- #50 P31 A New Technique of Multichannel Magnetoencephalographical Recordings of Cortical Recordings of Cortical Responses to Chemical Stimulation in Man. B. KETTENMANN, H. STEFAN and G. KOBAL, *University of Erlangen-Nürnberg.*
- #51 P32 EEG Responses to Odors Vary With Cognitive State and Prior Experience. W.R. KLEMM, S. D. LUTES, D. V. HENDRIX, *Chemical Senses Laboratory, Texas A&M University* and S. WARRENBURG, *International Flavors & Fragrances Co., Union Beach, N.J.*
- #52 P33 Volumetric Analysis of Nasal Airways via Artificially Intelligent Computer Analysis of MR Images. MICHAEL FONTE, NIKOLAUS SZEVERENYI, DAVID E. HORNUNG and DANIEL B. KURTZ, *SUNY, Health Science Center, Syracuse, N.Y. 13210.*
- #53 P34 Ambient Odor: Effect on Consumer Decision-Making. DEBORAH J. MITCHELL, *Temple University*, BARBARA E. KAHN, *The Wharton School* and SUSAN C. KNASKO, *Monell Chemical Senses Center.*
- #54 P35 Monitoring Activity in Human Olfactory Elithelium: Odorant Induced Changes in Reflected Light. PAUL F. KENT, DANIEL B. KURTZ, THERESA L. WHITE, DAVID E. HORNUNG and PRECHA EMKO, *Smell and Taste Disorders Clinic, SUNY Health Science Center at Syracuse.*
- #55 P36 Electrical Responses Obtained from the Human Olfactory Epithelium. T. HUMMEL and G. KOBAL, *Dept. of Experimental and Clinical Pharmacology and Toxicology, University of Erlangen-Nürnberg, 91054 Erlangen, Germany.*

Thursday, April 14

**SLIDES**

Thursday Evening – 7:00-10:45

Olfactory Receptor Cells: Physiology to Specificity

*Chairperson: Frank Zufall*

7:00 #56 Cyclic AMP Directly Activates Chloride and Cation Conductances in Olfactory Receptor Neurons from the Mudpuppy, *Necturus maculosus*. ADRIENNE E. DUBIN, *San Diego State University, San Diego, CA* and VINCENTE. DIONNE, *Boston Univ. Marine Prog., Woods Hole, MA.*

7:15 #57 Characterization of a Non-desensitizing cAMP/cGMP Gated Channel on Isolated Human Olfactory Neurons. N. THÜRAUF, G. KOBAL, *Inst. of Exp. and Clin. Pharmacology and Toxicology, Univ. Erlangen, 91054 Erlangen, Germany* and H. HATT, *Inst. of Cellphysiology, Ruhr Univ., 44780 Bochum, Germany.*

7:30 #58 Calcium-Calmodulin Modulation of Cyclic Nucleotide-Gated Cation Channel of Olfactory Receptor Cells. K.-W. YAU, T.-Y. CHEN and M.Y. LIU, *Howard Hughes Med. Inst. and Johns Hopkins Univ. Sch. of Med., Baltimore, MD 21205.*

7:45 #59 Activation Kinetics of an Olfactory Recombinant Cyclic Nucleotide-Gated Channel from Rat for Pulses with Different Second Messenger Concentrations. FRANK ZUFALL<sup>1</sup>, HANNS HATT<sup>2</sup>, RODERICK V. JENSEN<sup>1</sup> and GORDON M. SHEPHERD<sup>1</sup>, <sup>1</sup>*Section of Neurobiology, Yale Medical School, New Haven, CT 06501* and <sup>2</sup>*Zellphysiologie, Ruhr Universität Bochum, FRG.*

8:00 #60 Specialization of Single Plant Odour Receptor Neurons in the Pine Weevil Studied by Linked Gas Chromatography-Electrophysiology. A. WIBE and H. MUSTAPARTA, *Univ. Trondheim, Norway.*

8:15 #61 Topographical Distribution of Receptor Expressing Neurons in the Olfactory Epithelium. H. BREER, STROTMANN, J., WANNER, I., KRIEGER, J. and K. RAMING, *Institute of Zoophysiology, University Stuttgart-Hohenheim, 70599 Stuttgart, FRG.*

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8:30 #62 PCR Amplification of Odor Receptor cDNA from Individual Olfactory Neurons in Salamander. HAIQING ZHAO, PAUL DIBELLO, JOHN CARLSON, *Yale University* and STUART FIRESTEIN, *Columbia University.*

8:45 #63 Members of a Family of *Drosophila* Putative Odorant-Binding-Proteins are Expressed in Different Subsets of olfactory Hairs. C.W. PIKIELNY<sup>1</sup>, G. HASAN<sup>2</sup>, F. ROUYER<sup>1</sup> and M. ROSBASH<sup>1</sup>, <sup>1</sup>*Brandeis U,* <sup>2</sup>*Indian Inst. of Sciences.*

**9:00 Refreshment Break**

Human Chemoreception I: Trigeminal and Multimodal Systems

*Chairperson: Ann Noble*

9:15 #64 Perception of Mixtures of Airborne Chemicals by the Olfactory, Nasal Trigeminal, and Ocular Trigeminal Sensory Systems. J. ENRIQUE COMETTO-MUÑIZ and WILLIAM S. CAIN, *John B. Pierce Laboratory & Yale University, New Haven, CT 06519.*

9:30 #65 Cognitive-, Facial-, and Heart-Rate Responses Equally Indicate Taste- and Odor-Hedonics. J.E. STEINER and J. MEIRI, *Dept. Oral Biology; Hebrew University, School of Dent. Med., Jerusalem, Israel.*

9:45 #66 Influence of Oral Volume Capacity on Perception of Astringent Intensity. C.J. CORRIGAN and H. T. LAWLESS, *Cornell University.*

10:00 #67 Effects of Oral Irritation on Components of Flavour Mixtures. JOHN PRESCOTT and RICHARD J. STEVENSON, *CSIRO Sensory Research Centre, Sydney, Australia.*

10:15 #68 Matching and Scaling of Taste-Smell Mixtures: Individual Differences in Sweetness Enhancement by Strawberry Odor. NICOLETTE J. VAN DER KLAAUW and ROBERT A. FRANK, *University of Cincinnati.*

10:30 #69 Taste and Oral Sensations Elicited by Benzoic Acid Derivatives. H. PELEG and A.C. NOBEL, *University of California, Davis, CA 95616.*

## POSTERS

Thursday Evening – 7:00-11:15pm

*Nitric Oxide and Carbon Monoxide in Chemoresponse  
Olfactory Central Pathways I: Development and Plasticity  
Human Chemoreception II: Gustatory Function*

- #70 P1 NADPH Diaphorase Activity in Olfactory Receptor Neuron Axons in Hamsters Conforms to a Rhinotopically-Distinct Dorsal Projection Zone in the MOB. THOMAS K. KNOTT, AMY L. MAY and THOMAS A. SCHOENFELD, *Depts. of Psychology and Biology and the Neuroscience Program, Clark University, Worcester, MA 01610.*
- #71 P2 NADPH-diaphorase Histochemistry in the Nasal Chemosensory Systems of Immature and Adult Opossum, *Monodelphis domestica*. LENA SHNAYDER, MICHELLE ROOK and MIMI HALPERN, *SUNY Health Science Center at Brooklyn, Program in Neural and Behavioral Sciences, 450 Clarkson Ave., Brooklyn, NY 11203.*
- #72 P3 Localization of Nitric Oxide Synthase in the Olfactory Epithelium of the Rat and Channel Catfish. C. DELLACORTE, D.L. KALINOSKI, T. HUQUE, L. WYSOCKI and D. RESTREPO, *Monell Chemical Senses Center, Philadelphia, PA 19104.*
- #73 P4 Heme Oxygenase-2 in the Olfactory System: Localization, Correlation with Cyclic GMP Levels and Regulation of Activity by TGF-beta. TATSUYA INGI, JAY DINERMAN and GABRIELE V. RONNETT, *Johns Hopkins U. School of Medicine.*
- #74 P5 Localization of NADPH-Diaphorase Activity in *Drosophila* Olfactory Tissues. DEBASISH RAHA and JOHN CARLSON, *Dept. of Biology, Yale University.*

- #75 P6 Expression of Nitric Oxide Synthase in Olfactory Epithelium and Bulb, and in the Vomeronasal Organ and Accessory Olfactory Bulb of Rats: Variation With Age. LINDA M. WYSOCKI, CHRISTIAN DELLACORTE and CHARLES J. WYSOCKI, *Monell Chemical Senses Center, Philadelphia, PA.*
- #76 P7 Nitric Oxide Synthase Staining in the Lobster Olfactory System. A. BARNHART and E. ORONA, *Whitney Laboratory, University of Florida, St. Augustine, FL 32086.*
- #77 P8 Immediate-Early Gene Expression in the Regenerating Olfactory System of the Spiny Lobster. E. ORONA and A. BARNHART, *Whitney Laboratory, University of Florida, St. Augustine, FL 32086.*
- #78 P9 Life-Stage Changes in the Neuroanatomy of the Salmon Olfactory Bulb: Implications for a Peripheral Component in Olfactory Imprinting. HUGH E. JARRARD, M. CRABTREE and T.T. TAKAHASHI, *Inst. of Neuroscience, University of Oregon, Eugene, OR 97403.*
- #79 P10 Changes in Expression of Fos Protein In the Developing Rat Olfactory Bulb Following Unilateral Nasal Occlusion. ANNA Y. KLINTSOVA, BENJAMIN D. PHILPOT and PETER C. BRUNJES, *University of Virginia.*
- #80 P11 Development of Oligodendrocyte/Myelin-Immunoreactivity in the Olfactory Bulb. BENJAMIN D. PHILPOT, ANNA Y. KLINTSOVA and PETER C. BRUNJES, *University of Virginia.*
- #81 P12 Cross-strain Transplantation of Olfactory Bulbs in Rat. MARY E. LEE, JON N. KOTT, LESNICK E. WESTRUM, *University of Washington, RAYMOND D. LUND, University of Cambridge.*
- #82 P13 Effects of Unilateral Olfactory Deprivation on Olfactory Bulb Responses to Odors in the Rat. DONALD A. WILSON, *University of Oklahoma.*
- #83 P14 Depression Affects Olfactory Recognition. R.L. METZGER, M.C. WILSON, E.A. RODDY and V.J. SCHILD, *University of Tenn. at Chattanooga.*
- #84 P15 Expression of *Pax-6* in the Developing Olfactory System of *Xenopus laevis*. JENNIFER J. SWIERGIEL, KAREN K. OISHI and GAIL D. BURD, *Dept. of Molecular and Cellular Biology, University of Arizona, Tucson, AZ.*

Thursday, April 14

- #85 P16 Serotonergic Receptor Involvement in Conditioned Olfactory Learning in Neonatal Rats. JOHN H. MCLEAN, *Div. of Basic Medical Sciences, Memorial University of Newfoundland, St. John's, Nfld., Canada, A1B 3V6* and ANDREA DARBY-KING, *Div. of Basic Medical Sciences, Memorial Univ. of Nfld., St. John's, Nfld., Canada, A1B 3V6.*
- #86 P17 Locus Coeruleus Modulation of Olfactory-Based Behaviors in Newborn Rats. REGINA M. SULLIVAN, DONALD A. WILSON, CHRISTIAN LEMON, *University of Oklahoma* and GREG A. GERHARDT, *University of Colorado.*
- #87 P18 The Tastes of Polycose and Monosodium Glutamate in Humans. THOMAS P. HETTINGER, MARION E. FRANK and WALTER E. MYERS, *University of Connecticut Health Center, Farmington, CT, USA.*
- #88 P19 The Taste of MSG Before and After Salt-Adaptation: Assessment Using Three Different Rating Tasks. ELAINE T. DEHAN, NICOLETTE J. VAN DER KLAUW and ROBERT A. FRANK, *University of Cincinnati.*
- #89 P20 6-n-propylthiouracil (PROP) Supertasters and Women Have Greater Number of Fungiform Papillae Taste Buds. VALERIE B. DUFFY<sup>1</sup>, INGLIS J. MILLER, JR.<sup>2</sup>, LINDA M. BARTOSHUK<sup>1</sup>, <sup>1</sup>*Yale University School of Medicine, New Haven, CT*, <sup>2</sup>*Bowman Gray School of Medicine, Winston-Salem, NC.*
- #90 P21 Preliminary Examination of Suprathreshold Olfactory and Taste Perception: Free-Living Elderly Females Exhibit Greater Olfactory Than Taste Impairment. LAURIE A. LUCCHINA<sup>1</sup>, LINDA M. BARTOSHUK<sup>2</sup>, VALERIE B. DUFFY<sup>2</sup>, ANN M. FERRIS<sup>1</sup> and LAWRENCE E. MARKS<sup>3</sup>, <sup>1</sup>*University of Connecticut, Storrs, CT*; <sup>2</sup>*Yale University, New Haven, CT*; and <sup>3</sup>*John B. Pierce Laboratory, New Haven, CT.*
- #91 P22 Correlation Patterns of Human Thresholds for Sucrose Octaacetate, Denatonium Benzoate, Quinine Sulfate and Propylthiouracil. DAVID B. HARDER, *Department of Psychology, Florida State University.*
- #92 P23 Sensitivity to the Bitterness of Iso- $\alpha$ -acids: The Effects of Age and Interactions with NaCl . YOSHIKO YOKOMUKAI<sup>1,2</sup>, PAUL A.S. BRESLIN<sup>1</sup>, BEVERLY J. COWART<sup>1</sup> and GARY K. BEAUCHAMP<sup>1</sup>, <sup>1</sup>*Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA*; <sup>2</sup>*Kirin Brewery Co., Ltd. Tokyo, JAPAN.*

Thursday, April 14

- #93 P24 Magnitude Matching and Scaling of Citric Acid on the Anterior Tongue in Humans. R.A. ENGLEHARDT, J. ZUNIGA, N. CHEN, C. PHILLIPS, *U. North Carolina.*
- #94 Withdrawn
- #95 P25 Effect of Expectations on Hedonic Ratings and Taste Perception. DEBRA A. ZELLNER, SHAWN ROWE and SORAYA CENTENO, *Shippensburg University.*
- #96 P26 Synergism Among Binary Mixtures of Fourteen Sweeteners. SUSAN S. SCHIFFMAN, ELIZABETH A. SATTELY-MILLER, BREVICK G. GRAHAM, *Duke University*, SUZANNE D. PECORE, BARBARA J. BOOTH, B. THOMAS CARR and MICHAEL L. LOSEE, *The NutraSweet Co.*

Friday, April 15, 1994

SLIDES

Friday Morning – 8:00-12:50

Taste Cell Physiology and Transduction

Chairperson: Sheella Mierson

- 8:00 #97 Cyclic AMP and cyclic GMP Mimic the Effect of Artificial Sweeteners in Isolated Hamster Taste Cells. THOMAS A. CUMMINGS, CHRISTI DANIELS and SUE C. KINNAMON, *Colorado State University and the Rocky Mountain Taste and Smell Center.*
- 8:15 #98 Paracellular Junction Potentials Contribute Quantitatively to Salt Taste Responses in the Hamster *Chorda Tympani*. HARRY WMS. HARPER, *Duck Engineering Design, 500 E. 63<sup>rd</sup> St., New York, N.Y. 10021.*
- 8:30 #99 Rat Tongue Epithelium Has Basolateral Amiloride-Sensitive Na<sup>+</sup>-Transport Pathway. SHEELLA MIERSON, MICHELLE MARIE OLSON, AMY TIETZ, TERRI MACHTINGER, BARBARA K. GIZA and THOMAS R. SCOTT, *University of Delaware, Newark, DE 19716.*
- 8:45 #100 Voltage-Dependent Calcium Currents in *Necturus* Taste Receptor Cells Are Modulated by Serotonin Via Two Different Second Messenger Pathways. R.J. DELAY, S.C. KINNAMON and S.D. ROPER, *Dept. of Anatomy & Neurobiology, Colo St. Univ. and the Rocky Mt. Taste & Smell Center, Univ. Colo Health Science Cntr.*
- 9:00 #101 Amiloride-Sensitive Na<sup>+</sup> Currents in Taste Cells Isolated from Neonatal Rats. MARTHA MCPHEETERS<sup>1,3</sup>, JOHN C. KINNAMON<sup>2,3</sup> and SUE C. KINNAMON<sup>1,3</sup>, <sup>1</sup>*Department of Anatomy and Neurobiology, Colorado State University, Fort Collins, CO 80523,* <sup>2</sup>*Department of Biological Sciences, University of Denver, Denver, CO 80208,* <sup>3</sup>*Rocky Mountain Taste and Smell Center, Denver, CO 80262.*

Friday, April 15

- 9:15 #102 The Rat CT-Response to KCl is Insensitive to Field Voltage Perturbations: Implications for the Location of K<sup>+</sup> Transducer Sites. QING YE, GERARD L. HECK and JOHN A. DeSIMONE, *Department of Physiology, Virginia Commonwealth University, Richmond VA, 23298-0551.*

- 9:30-10:35 Minisymposium on Animal Behavior: Temporal Coding

Chairperson: Jelle Atema

- 9:35 #103 MS-5 The Fine-Scale Structure of Chemical Signals Within the Feeding Current of a Calanoid Copepod. PAUL A. MOORE, *Monell Chemical Senses Center*, DAVID M FIELDS and JEANNETTE YEN, *Marine Sciences Research Center, State University of New York.*
- 9:50 #104 MS-6 Stimulus Integration Time of Lobster Olfactory Receptor Neurons. GEORGE GOMEZ and JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory, Woods Hole MA 02543.*
- 10:05 #105 MS-7 Turbulent Odor Plumes and Chemo-orientation in Nature. N. DEAN PENTCHEFF, CHRISTOPHER FINELLI, DAVID S. WETHEY and RICHARD ZIMMER-FAUST, *University of South Carolina, Columbia, SC.*
- 10:20 #106 MS-8 Reiterative Responses to Single Strands of Odor Promote Sustained Upwind Flight and Odor Source Location by Moths. N.J. VICKERS and T.C. BAKER, *Iowa State University.*

- 10:35 Refreshment Break

- 10:45 Symposium on Spatial Coding: Molecules to Behavior  
Organizers: Thomas Schoenfeld and Linda Buck

- 10:50 #107 S-6 Zonal Patterns of Odorant Receptor Gene Expression. L.B. BUCK, S.L. SULLIVAN and K.R. RESSLER, *Harvard Medical School.*

Friday, April 15

- 11:10 #108 S-7 Rhinotopy as an Organizing Principle in the Olfactory System. T. SCHOENFELD, *Clark University.*
- 11:30 #109 S-8 Odorant Coding in the Olfactory System: Lessons from the Salamander. J. KAUER, A.R. CINELLI, K. DORRIES, A. JESURUM and J. WHITE, *Tufts Medical School and New England Medical Center.*
- 11:50 #110 S-9 Odorant-Specific Spatial Patterns in Mucosal Activity: Correlation with Behavior. S. YOUNGENTOB, P.F. KENT and P.R. SHEEHE, *SUNY, HSC, Syracuse.*
- 12:10 #111 S-10 Is Olfactory Space Irrelevant? B. SLOTNICK, *American University.*
- 12:30 #112 S-11 Is There More to Olfactory Spatial Coding Than Meets the Eye? F. MACRIDES, *Worcester Foundation for Experimental Biology.*

**Friday Afternoon**

- 1:00      **Workshop: All You Want to Know about NIH Grants**

*Organizers: Jane Hu and Jack Pearl*

- 3:30      **Minisymposium on Cell Lineage Analysis**

*Organizer: Rochelle Small*

- #113 MS-9 The Use of Retroviral Vectors to Analyze Cell Lineage, Proliferation, Determination and Migration During the Development of the Mammalian Forebrain. MARLA B. LUSKIN, Dept. of Anatomy and Cell Biology, *Emory University School of Medicine, Atlanta, GA.*

- #114 MS-10 Retroviral Lineage Studies of the Rat Olfactory Epithelium. J.E. SCHWOB<sup>1</sup>, J.M.T. HUARD<sup>1</sup>, M.B. LUSKIN<sup>2</sup> and S.L. YOUNGENTOB<sup>1</sup>, <sup>1</sup>*SUNY Health Sci. Ctr, Syracuse, NY and*<sup>2</sup>*Emory Univ. School of Medicine, Atlanta, GA.*

Friday, April 14

- #115 MS-11 Analysis of Olfactory Epithelial Cell Lineages Using a Replication Incompetent Retrovirus. MARY E. CAGGIANO, JOHN S. KAUER and DALE D. HUNGER, *Neuroscience Program, Tufts/New England Medical Center, Boston, MA.*
- #116 MS-12 Amphibian Taste Buds Arise from Endoderm. LINDA A. BARLOW and R.G. NORTHCUTT, *University of California, San Diego.*
- #117 MS-13 Use of Chimeric Mice in the Analysis of Taste Bud Cell Lineage. T. FINGER and L. STONE, *Rocky Mountain Taste and Smell Center, Univ. of Colorado School of Medicine, Denver, CO.*

5:00      **Industry/Academia Buffet**

*Organizers: Craig Warren and Tracy Karrer*

**POSTERS**

**Friday Morning – 8:00-1:00 pm**

*Gustatory Central Pathways I*

*Human Chemoreception III: Olfactory Function and Dysfunction*

*Animal Trigeminal and Human Chemoreception IV: Trigeminal and Multimodal Systems*

- #118 P1 Effects of Stimulus Novelty on NaCl Taste-Induced Expression of C-fos in the Central Nervous System of Golden Hamsters. MICHAEL A. BARRY, ELISSA J. CHESLER and DAVID C. LARSON, *Department of BioStructure and Function, University of Connecticut Health Center.*
- #119 P2 Fos Labeling in the Parabrachial Nucleus after Electrical Stimulation of Taste Nerves in Lightly-Anesthetized Rats. THERESE A. HARRISON and NANCY W. MILLER, *Cellular Biology & Anatomy, Medical College of Georgia.*

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- #120 P3 Taste Specificity of c-Fos Induction in the Rat Nucleus of the Solitary Tract Following Conditioned Taste Aversion Formation. T.A. HOUPT, J.M. PHILOPENA, J.JHANG, T.H. JOH and G.P. SMITH, *E.W. Bourne Behav. Res. Lab., Dept. Psychiatry, and Lab. Molecular Neurobiol., Dept. Neurol. Neurosci., Cornell Univ. Med. Coll.*
- #121 P4 The Time Course of Taste Mixture Responses in Hamster Parabrachial Neurons. MARK B. VOGT and DAVID V. SMITH, *University of Cincinnati College of Medicine.*
- #121a P5 Hypoglossal Neural Activity During Taste-Elicited Rejection Responses in the Awake Rat. L.A. DINARDO and J.B. TRAVERS, *Ohio State University, Columbus, OH 43210.*
- #122 P6 Information Processing in the Gustatory Nuclei of the Brain Stem: Electrophysiological Data. PATRICIA M. DILORENZO and SCOTT MONROE, *SUNY at Binghamton.*
- #123 P7 Information Processing in the Gustatory Nuclei of the Brain Stem: Gustatory Unit Stimulus Selective Topographical Organizer (GUSSTO), a Network Model. FRANK W. GRASSO and PATRICIA M. DILORENZO, *SUNY at Binghamton.*
- #124 P8 A Computerized Gustatory Stimulator That Delivers Taste Solutions Through a Single Nozzle Without Contamination. L.A. EVEY and R. NORGREN, *Pennsylvania State University, Hershey, PA 17033.*
- #125 P9 Relfex Connections Between a Primary Gustatory Nucleus and Motoneurons Controlling Oromotor Activity. B. BOTTGER and T.E. FINGER, *Dept. Cell. and Struct. Biol., Univ. Colorado Sch. Medicine, Denver, CO 80262.*
- #126 P10 Forebrain Projections from the Gustatory Cortex of the Syrian Golden Hamster. R.G. WEHBY, J.deB. ZEIGER and J.A. LONDON, *Center for Neurological Sciences and Department of BioStructure and Function, Univ. of Connecticut Health Center, Farmington, CT 06030.*
- #127 P11 Central Connectivity of the Hamster Gustatory Nerves Demonstrated with Biotinylated Dextrans. A.P. KNOX, M.A. BARRY, *UCONN Health Center, Farmington, CT.*

Friday, April 15

- #128 P12 Development of the Vagal Gustatory System in the Goldfish. CHARLES F. LAMB, *Dept. Cell. & Struct. Biol., Univ. Colorado Hlth. Sci. Ctr., Denver, CO.*
- #129 P13 Development of Intrinsic Neurophysiological Properties of Cells in Rat Nucleus of Solitary Tract Using an In Vitro Slice Preparation. H. BAO, R.M. BRADLEY and C.M. MISTRETTA, *School of Dentistry, University of Michigan, Ann Arbor, MI 48109.*
- #130 P14 Alterations in the Distribution of Geniculate Ganglia Proteins Following Early Postnatal Receptor Damage. PHILLIP S. LASITER and BERNARD B. BULCOURF, *Florida Atlantic University.*
- #131 P15 The Effect of Food Deprivation on Gustatory-Evoked Activity in the Nucleus Tractus Solitarius of the Rat. LAURENCE J. NOLAN and THOMAS R. SCOTT, *University of Delaware.*
- #132 P16 Picture-based Odor Identification in Alzheimer's Patients and Normal Controls. CHARLIE D. MORGAN<sup>1</sup>, CLAIRE MURPHY<sup>1,2</sup> and STEVEN NORDIN<sup>1,2</sup>, <sup>1</sup>*San Diego State University* and <sup>2</sup>*UCSD Medical Center.*
- #133 P17 Deterioration of Implicit Long-Term Olfactory and Visual Memory in Alzheimer's Disease. CAPRICE A. NICCOLI<sup>1</sup>, LETICIA ACOSTA<sup>1</sup>, STEVEN NORDIN<sup>1,2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*San Diego State University* and <sup>2</sup>*UCSD Medical Center.*
- #134 P18 Olfactory Dysfunction: Clinical Issues in Brain Injury Rehabilitation. RICHARD M. COSTANZO, *Virginia Commonwealth University* and NATHAN D. ZASLER, *National NeuroRehabilitation Consortium.*
- #135 P19 Chemosensory Assessment of HIV-Infected Adults. RICHARD D. MATTES, CHARLES J. WYSOCKI, *Monell Chemical Senses Center*, AMY GRAZIANI and ROB ROY MACGREGOR, *Hospital of the University of Pennsylvania.*
- #136 P20 Olfactory Deficits in Patients Infected with the Human Immunodeficiency Virus. DAVID E. HORNUNG, DONALD C. BLAIR, ELIZABETH C. CLARK, PAUL R. SHEEHE and DANIEL B. KURTZ, *SUNY, Health Science Center, Syracuse, N.Y. 13210.*

Friday, April 15

- #137 P21 Discrepancies in Perceived and Diagnosed Smell Sensitivity in Patients with Alzheimer's and Nasal/Sinus-Inflammatory Disease, and in Normal Elderly. DAYNA WILHITE<sup>1</sup>, STEVEN NORDIN<sup>1,2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*San Diego State University and <sup>2</sup>UCSD Medical Center.*
- #138 P22 Changes in Olfactory Ability During the Course of an Upper Respiratory Infection. KAREN CHOJNACKI, DAVID E. HORNUNG, DANIEL B. KURTZ and KARL MCKNIGHT, *Biology Department, St. Lawrence University, Canton, N.Y. 13617 and SUNY Health Science Center, Syracuse, N.Y. 13210.*
- #139 P23 Nasal Disease and Olfaction in Chronic Sinusitis Patients. MARITESS MAURICIO<sup>1</sup>, TERENCE M. DAVIDSON<sup>1</sup>, ALFREDO A. JALOWAYSKI<sup>1</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*UCSD Medical Center and <sup>2</sup>San Diego State University.*
- #140 P24 Olfactory Loss in a Brother and Sister Following Their Simultaneously Contracted Upper Respiratory Viral Infections: A Case Report. ALAN R. HIRSCH, *Smell & Taste Treatment and Research Foundation, DANA OSTER, University of Illinois Medical School, Chicago.*
- #141 P25 Olfactory Threshold in Allergic Rhinitis Patients Before and After Nasal Allergen Challenge. ALFREDO A. JALOWAYSKI<sup>1</sup>, KRISTEN KONAR<sup>2</sup>, TERENCE M. DAVIDSON<sup>1</sup>, CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*UCSD Medical Center and <sup>2</sup>San Diego State University.*
- #142 P26 The Effect of Floral Odor on Learning. ALAN R. HIRSCH, *Smell & Taste Treatment and Research Foundation* and LISA H. JOHNSTON, *Rush-Presbyterian-St. Luke's Medical Center.*
- #143 P27 Specific Hyperosmia: Fact or Artifact? JOHN E. AMOORE, *Olfacto-Labs.*
- #144 P28 Influence of Synthetic Acids on Mens Assessment of Women. REGINA E. MAIWORM and WERNER U. LANGTHALER, *Department of Psychology I, Fliednerstr. 21, D-48149 Münster.*
- #145 P29 Odor Qualities of Androstenone and Pemenone as Perceived by Pemenone-Osmics and Allosmics. DAVID A. STEVENS, *Clark University* and ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology.*

Friday, April 15

- #146 P30 Subjective Hyposmia: Seven Cases. ALAN R. HIRSCH, *Smell & Taste Treatment and Research Foundation* and LINDA TALYA, *University of Illinois Medical School, Chicago.*
- #147 P31 Psychosocial Aspects of Chemosensory Disorders. TAMARA J. KURTZ, THERESA L. WHITE, DANIEL B. KURTZ and ELIZABETH M. BELKNAP, *Smell and Taste Disorders Clinic, SUNY Health Science Center, Syracuse, NY 13210.*
- #148 P32 The Effect of Capsaicin and Pentanoic Acid Son the Sensitivity of Trigeminal Neurons. PAUL A. MOORE and BRUCE P. BRYANT, *Monell Chemical Senses Center, Philadelphia, PA 19104.*
- #149 P33 Tongue Adaptation Temperature Influences Lingual Nerve Responses to Thermal and Menthol Stimulation. ROBERT F. LUNDY JR. and ROBERT J. CONTRERAS, *Florida State University, Department of Psychology, Tallahassee, FL, 32306-1051.*
- #150 P34 Acetazolamide Inhibits Ethmoid Nerve Responses to Carbon Dioxide But Not to Other Irritants. W.L. SILVER and J. L. ERIKSEN, *Wake Forest University, Winston-Salem, NC.*
- #151 P35 Successive Desensitization: a Low Pain/High Dose Technique for Oral Capsaicin Delivery. WOLFFE NADOOLMAN, VALERIE B. DUFFY, ANN M. BERGER and LINDA M. BARTOSHUK, *Yale University, New Haven, CT.*
- #152 P36 Principal Components Analysis of Astringency and Sourness Ratings of Acids, Alum and Mixtures. HARRY LAWLESS and CAROL CORRIGAN, *Cornell University.*
- #153 P37 Capsaicin Desensitization Can Abolish Oral Pain. T. KARRER, *International Flavors and Fragrances* and L.M. BARTOSHUK, *Yale University School of Medicine.*
- #154 P38 Prior Experience with Capsaicin Alters Ratings of its Burn. RICHARD J. STEVENSON and JOHN PRESCOTT, *CSIRO Sensory Research Centre, Sydney, Australia.*

Friday, April 15

- #155 P39 The Cross-Modal Relationship between Vision and Olfaction is Dimensional: Color Value Varies Inversely with Odor Intensity. SARAH E. KEMP and AVERY N. GILBERT, *Givaudan-Roure Corporation, Fragrance Division, Teaneck, NJ 07666.*

- #156 P40 The Effect of Oral Capsaicin on the Perceived Intensity and Detectability of Taste and Retronasal Odor. BARRY G. GREEN, *Monell Chemical Senses Center.*

- #157 P41 Taste and Smell Function in HIV Infection. CAMILLA S. GRAHAM, BREVICK G. GRAHAM, JOHN A. BARTLETT, ALISON E. HEALD and SUSAN S. SCHIFFMAN, *Duke University.*

#### SLIDES

Friday Evening – 7:00-10:30

#### Human Chemoreception V: Gustatory Function and Dysfunction

Chairperson: April Mott

- 7:00 #158 Spatial Taste Abnormalities After Head Trauma. A. MOTT\*, W. MYERS, J. GENT+, M. BARWICK\*, *Univ. of CT Health Center, Farmington, CT* \*School of Medicine; +John B. Pierce Laboratory, New Haven, CT.

- 7:15 #159 Sweet Taste Depression using Two Different Inhibitors. GORDON G. BIRCH, CLAIRE JOHNSON, DOUGLAS B. MCDOUGALL and KAY O'DONNELL, Dept. of Food Science and Technology, University of Reading, P.O. Box 226, Whiteknights, Reading, Berks, UK RG6 2AP.

- 7:30 #160 Probabilistic Models for Sequential Taste Effects in Triadic Choice. DANIEL M. ENNIS, Philip Morris Research Center, the Medical College of Virginia and the University of Illinois, SUSAN TEDJA, RYUICHI NONAKA and MICHAEL O'MAHONY, University of California, Davis.

- 7:45 #161 A Taste Confusion Matrix. MARION E. FRANK<sup>1</sup>, THOMAS P. HETTINGER<sup>1</sup>, JANNEANE F. GENT<sup>2</sup> and LAWRENCE E. MARKS<sup>2</sup>, <sup>1</sup>UConn Health Center, Farmington and <sup>2</sup>J.B. Pierce Laboratory, New Haven CT, USA.

Friday, April 15

- 8:00 #162 A Psychophysical and Anatomical Study of the Development of the Sense of Taste in Adults and Children. N.J. STEIN, D.G. LAING, I. HUTCHINSON, Centre For Advanced Food Research, University of Western Sydney, Richmond, NSW, Australia. 2753.

- 8:15 #163 Detection of Additive, Cross-Quality Taste Mixtures. JOSEPH C. STEVENS and JULIANNE M.. HOFFMAN, John B. Pierce Laboratory.

- 8:30 #164 Amiloride Suppresses the Saltiness of LiCl but not KCl in Humans. ANN M. TENNISSEN, College of Saint Rose, Albany, NY.

- 8:45 #165 Effects of Amiloride on Human Taste Perception: Implications for Na<sup>+</sup> Receptor Mechanisms. CORINNE A. OSSEBAARD and DAVID V. SMITH, University of Cincinnati College of Medicine.

- 9:00 Refreshment Break

#### Olfactory Central Pathways II

Chairperson: Charles Greer

- 9:15 #166 Receptor Neuron Responses to Pheromone Compounds and Formate Analogues in the Noctuid Moth *Heliothis virescens*. BENTE G. BERG<sup>2</sup>, JAMES TUMLINSON<sup>1</sup>, HANNA MUSTAPARTA<sup>2</sup>, <sup>1</sup>USDA, Gainesville, FL and <sup>2</sup>Dept. Zoology, U. Trondheim, Dragvoll, Norway.

- 9:30 #167 Projection Patterns of Single Pheromone Receptor Neurons in the Antennal Lobe of the Male Tobacco Budworm Moth, *Heliothis virescens*. TOR J. ALMAAS, Dept. of Zoology, U. Trondheim, Dragvoll, Norway, BILL HANSSON and SYLVIA ANTON, Dept. of Ecology, U. Lund, Lund, Sweden.

- 9:45 #168 Comparative Analysis of Central Pheromone Information-Processing Circuits in Two Closely-Related Sympatric Noctuid Moths. THOMAS A. CHRISTENSEN<sup>1</sup>, HANNA MUSTAPARTA<sup>2</sup>, SUSANNAH HANNAFORD<sup>1</sup> and JOHN G. HILDEBRAND<sup>1</sup>, <sup>1</sup>ARL Div. of Neurobiol., U. Arizona, Tucson 85721 and <sup>2</sup>Dept. Zoology, U. Trondheim, Dragvoll, NORWAY.

Friday, April 15

- 10:00 #169 Giant 5HT-IR Neurons and Accessory Lobes in Crayfish Brain: Their Possible Role in Olfaction. DAVID SANDEMAN<sup>1</sup>, BARBARA BELTZ<sup>2</sup> and RENATE SANDEMAN<sup>1</sup>, <sup>1</sup>*University of New South Wales and <sup>2</sup>Wellesley College.*

- #170 Withdrawn

- 10:15 #171 Evidence for Modulation of Amino Acid Receptors by Endogenous Zinc and Copper. PAUL Q. TROMBLEY and GORDON M. SHEPHERD, *Section of Neurobiology, Yale Medical School, New Haven, CT 06501.*

## POSTERS

Friday Evening – 7:00-11:15 pm

### Olfactory Systems: Development, Migration and Plasticity Physiology and Transduction I: Gustation and Olfaction, Spatial Patterning

- #172 P1 Anatomical changes in the lateral antennule of the American lobster, *Homarus americanus*, during larval development. LYNDA FARLEY and JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543.*

- #173 P2 Morphological and Physiological Transformations in the Olfactory Sensilla of Blue Crabs Acclimated to Low Salinity. RICHARD A. GLEESON<sup>1</sup>, MICHELE WHEATLY<sup>2</sup>, LORRAINE M. McDOWELL<sup>3</sup>, CARL L. REIBER<sup>2</sup>, HENRY C. ALDRICH<sup>3</sup>, <sup>1</sup>*The Whitney Lab, <sup>2</sup>Dept. of Zoology and <sup>3</sup>Dept. of Microbiology and Cell Science, University of Florida.*

- #174 P3 The Presence of PDGFR $\beta$  in the Adult and Young Mouse Olfactory System. WOOCHEAN JANG and JOEL MARUNIAK, *Division of Biological Sciences, University of Missouri-Columbia, Columbia, MO 65211.*

- #174a P4 Northern and Western Analysis of Interleukin 1- $\beta$  Expression in Mouse Olfactory Epithelial Tissue. ANDREA DELKESCAMP and JOEL MARUNIAK, *Dept. of Biological Sciences, University of Missouri, Columbia, MO 65211.*

Friday, April 15

- #175 P5 The Horizontal Basal Cells of the Olfactory Epithelium. ERIC H. HOLBROOK, KAREN E. MIELESZKO SZUMOWSKI and JAMES E. SCHWOB, *Department of Anatomy and Cell Biology, and Chemosensory Disorders Group, SUNY Health Science Center, Syracuse.*

- #176 P6 Long Term Survival of Olfactory Mucosa Transplants in Rat Brain. EDWARD E. MORRISON, PhD, KAREN WOLFE, *Auburn University* and PASQUALE P.C. GRAZIADEI, *Florida State University.*

- #177 P7 A Comparison of PGP- and Calbindin-like Immunoreactivity in the Developing Human Nasal Epithelium. EDWARD W. JOHNSON, PAMELA M. ELLER and BRUCE W. JAFEK, *Department of Otolaryngology and RMTSC, UCHSC, Denver, CO.*

- #178 P8 Glutathione Distribution in the Olfactory Mucosa of Rainbow Trout Following Olfactory Axotomy and Copper Toxicity. S.L. STARCEVIC and B.S. ZIELINSKI, *Univ. of Windsor, Canada.*

- #179 P9 Olfactory Responsiveness To Amino Acids And Sex Pheromones Return At Different Rates After Olfactory Nerve Axotomy In Goldfish. H.P. ZIPPEL, *Physiology Inst., University of Göttingen, FRG*, P. W. SORENSEN, *Dept. of Fisheries & Wildlife, Univ. of Minnesota.*

- #180 P10 Phenotypic Plasticity of Cells Dissociated from Embryonic Olfactory and Vomeronasal Organs. L. MAGRASSI and P.P.C. GRAZIADEI, *Florida State University.*

- #181 P11 Age- and Gender-Related Differences in the Expression of Glutathione S-Transferases in Human Olfactory Mucosa. N.S. RAMA KRISHNA<sup>1</sup>, MARILYN L. GETCHELL<sup>2,3</sup>, NIMRAT DHOOPER<sup>1</sup> and THOMAS V. GETCHELL<sup>1,2,3</sup>, <sup>1</sup>*Dept. of Physiology, <sup>2</sup>Div. of Otolaryngology, Dept. of Surgery, <sup>3</sup>Sanders-Brown Center on Aging, University of Kentucky College of Medicine, Lexington, KY 40536.*

- #182 P12 Cellular Localization of Amyloid Precursor Protein mRNA Isoforms in Rat Olfactory Epithelium. NIKHAT ZAIDI and BARBARA TALAMO, *Tufts Medical School, Boston, MA 02111.*

Friday, April 15

- #183 P13 The Effect of Human Olfactory Biopsy Upon Olfaction: A Preliminary Report. DONALD C. LANZA, M.D., DANIEL A. DEEMS, M.D., Ph.D., RICHARD L. DOTY, Ph.D., DAVID MORAN, Ph.D., DONAH CRAWFORD, M.A., DAVID W. KENNEDY, M.D., J. CARTER ROWLEY, III, Ph.D., *Smell & Taste Center, Department of Otorhinolaryngology: Head and Neck Surgery, ALISAJJADIAN, B.S., School of Medicine, Hahnemann University.*
- #184 P14 Postnatal Changes in the Number of Olfactory Receptor Neurons, Mitral Cells and the Possible Meaning of the Changing Convergence Ratio. RAIMUND APFELBACH and ELKE WEILER, *Department of Zoology, University of Tübingen, Auf der Morgenstelle 28, D-272076 Tübingen, Germany.*
- #185 P15 Early Events in Rat Olfactory System Development. QIZHIGONG and MICHAEL T. SHIPLEY, *University of Cincinnati.*
- #186 P16 Migration of Luteinizing Hormone-Releasing Hormone (LHRH) and Neural Cell Adhesion Molecule (NCAM)-Immunoreactive Cells From The Epithelium of the Medial Olfactory Pit in Humans. M. SCHWANZEL-FUKUDA, D.W. PFAFF, *Rockefeller University, New York, P.M. G. BOULOUX, Royal Free Hospital, London, England, J.-P. HARDELIN and C. PETIT, Pasteur Institute, Paris, France.*
- #187 P17 Migration of basal cells from the olfactory epithelium after bulbectomy. YUKO SUZUKI and MASAKO TAKEDA, *Higashi Nippon Gakuen University, Ishikari-Tobetsu, Japan.*
- #188 P18 Co-Culture of Olfactory Bulb Cells With Olfactory Epithelial Cells Results in Increased Numbers of OMP-Immunopositive Receptor Neurons. GRILL, R.J. JR., *Univ. of Cincinnati, S.K. PIXLEY, Univ. of Cincinnati, Cincinnati, OH 45267-0521.*
- #189 P19 Uptake and Transport of Cocaine in the Mouse Olfactory System. HARRIET BAKER and LINDA FRANZEN, *Cornell Univ. Med. Coll. at Burke Med. Res. Inst.*
- #190 P20 Tobacco Smoke-Induced Alterations of Rhodanese and Carboxylesterase in the Olfactory Mucosa of F344 Rats. K.J. NIKULA, L.A. SACHETTI, G.L. FINCH, B.T. CHEN and J.L. LEWIS, *Inhalation Toxicology Research Institute.*

Friday, April 15

- #191 P21 Glycogen, a Polysaccharide with a Taste to Hamsters? BRUCE I. MACKINNON, MARION E. FRANK, *University of Connecticut Health Center, Farmington, CT* and BRADLEY G. REHNBERG, *York College, York, PA.*
- #192 P22 Ionic Contaminants and Polycose Taste Responses. B.K. FORMAKER, C.J. HARP, B.I. MACKINNON, T.P. HETTINGER and M.E. FRANK, *The University of Connecticut Health Center.*
- #193 P23 IBMX and Hodulcin-Induced Suppression of Receptor Cell Responses to Sucrose in *Phormia Regina*. KARA D. FOSTER and LINDA M. KENNEDY, *Dept. of Biology, Clark University.*
- #194 P24 Contribution of Amiloride-Sensitive Pathways to Acid Transduction in Rats. DANIEL E. HARRIS<sup>1</sup>, DONNA M. GILBERTSON<sup>2</sup>, W. TODD MONROE<sup>2</sup>, SUE C. KINNAMON<sup>1</sup> and TIMOTHY A. GILBERTSON<sup>2</sup>, <sup>1</sup>*Dept. of Anatomy & Neurobiology, Colorado State Univ., Ft. Collins, CO 80523* and <sup>2</sup>*Pennington Biomedical Research Center, Louisiana State Univ., Baton Rouge, LA 70808.*
- #195 P25 Quinine Suppresses Facial Taste Responses to Amino Acids in the Channel Catfish. K. OGAWA and J. CAPRIO, *Louisiana State University.*
- #196 P26 Responses of Single Glossopharyngeal Taste Fibers in the Channel Catfish, *Ictalurus punctatus* to Amino Acids. K. OGAWA and J. CAPRIO, *Louisiana State University.*
- #197 P27 Bitter and Sweet Taste in Chimpanzee and Rhesus Monkey. GÖRAN HELLEKANT and Y. NINOMIYA, *Univ. of Wisconsin and Asahi Univ., Gifu Prefecture, Japan.*
- #197a P28 Chemical Modification of Brazzein, a Sweet Protein from *Pentadiplandra brazzeana*. DING MING and GÖRAN HELLEKANT, *Department of Animal Health and Biomedical Sciences, University of Wisconsin-Madison.*
- #198 P29 Amiloride Reduces the Aversiveness of Acids in Preference Tests. DONNA M. GILBERTSON and TIMOTHY A. GILBERTSON, *Pennington Biomedical Research Center, Louisiana State University, Baton Rouge LA 70808.*

Friday, April 15

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- #199 P30 Catfish Taste Cell Calcium Changes in Response to Arginine. MEMEKNEM ZVIMAN<sup>1</sup>, DIEGO RESTREPO<sup>1,2</sup> and JOHN TEETER<sup>1,2</sup>, <sup>1</sup>*Monell Chemical Senses Center, Philadelphia, PA 19104* and <sup>2</sup>*Department of Physiology, University of Pennsylvania, Philadelphia, PA 19107.*
- #200 P31 Immunoaffinity Isolation of a Putative L-Arginine Taste Receptor from the Channel Catfish. I. ANDREINI<sup>1,2</sup>, D.L. KALINOSKI<sup>1</sup>, J.H. TEETER<sup>1,3</sup>, A.I. SPIELMAN<sup>4</sup> and J.G. BRAND<sup>1,3,5</sup>, <sup>1</sup>*Monell Chemical Senses Center, Philadelphia, PA* and <sup>2</sup>*School of Veterinary, Univ. of Pise, Italy*, <sup>3</sup>*Univ. of Pennsylvania*, <sup>4</sup>*New York Univ. Coll. of Dentistry, NY*, <sup>5</sup>*Veterans Affairs Medical Center, Philadelphia, PA.*
- #201 P32 Active Site Mapping and Ligand Binding Studies of an Insect Odorant Binding Protein. G. DU and G.D. PRESTWICH, *State University of New York, Stony Brook.*
- #202 P33 Olfactory Processing In The Honey Bee, *Apis mellifera*: Sensory Interactions Between Odorants in Binary Mixtures. SEETHA BHAGAVAN and BRIAN H. SMITH, *Department of Entomology, 1735 Neil Ave., The Ohio State University, Columbus, OH 43210.*
- #203 P34 Multiplicity of Salmonid Olfactory Receptors for Bile Acids as Evidenced by Cross-adaption and Ligand Binding Assay. CHUNBO ZHANG and TOSHIAKI J. HARA, *Department of Zoology, University of Manitoba, and Department of Fisheries and Oceans, Freshwater Institute, Winnipeg, Canada.*
- #204 P35 Inhibition of Odorant-Receptor Binding Predicts Binary Mixture Interactions for Glutamate Receptors But Not Taurine or 5'AMP Receptors in the Olfactory Organ of the Spiny Lobster. MICHELLE BURGESS, KIRBY OLSON and CHARLES DERBY, *Dept. of Biology, Georgia State University.*
- #205 P36 Synergism of Insect Sex Pheromone Specialist Olfactory Receptor Neurons by Synthetic Analogues and Sex Pheromone Components. M.S. MAYER and R. E. DOOLITTLE, *USDA, ARS, PO Box 14565, Gainesville, FL 32604.*
- #206 P37 Responses of a Population of Olfactory Receptor Cells to Binary Mixtures in the Spiny Lobster. PETER C. DANIEL, *Hofstra University*, CHARLES DERBY, *Georgia State University.*

- #207 P38 Computer Modeling of Odor Ligand-Odor Receptor Interactions. M.S. SINGER and G.M. SHEPHERD, *Section of Neurobiology, Yale University School of Medicine, New Haven, CT 06510.*
- #208 P39 Study of Salamander and Rat Olfactory Receptor Physiology Using Voltage Sensitive Dyes. ROBERT C. GESTELAND, PEGGY FARMER and MAUREEN FITZGERALD, *University of Cincinnati College of Medicine, Cincinnati, OH 45267-0521.*
- #209 P40 Transgenic Analysis of the OMP Promoter Illustrates Differential lacZ Expression in Discrete Subsets of Olfactory Neurons. ERIC WALTERS, GLAUCO TAROZZO, ALICIA PHILLIPS, MARY GRILLO and FRANK MARGOLIS, *Roche Institute of Molecular Biology, Nutley, NJ.*
- #210 P41 Odorant Transport and Uptake in a Bullfrog Nasal Cavity Model. KEE H. PYON<sup>1</sup>, PETER W. SCHERER<sup>1</sup>, MAXWELL M. MOZELL<sup>2,3</sup> and GEORGE PRETT<sup>3</sup>, <sup>1</sup>*Dept. of Bioengineering, Univ. of PA, Phila., PA.*, <sup>2</sup>*SUNY Health Sci. Ctr. at Syracuse*, <sup>3</sup>*Monell Chem. Senses Ctr. & Dept. of Dermatology, Univ. of PA, Phila., PA.*
- #211 P42 Differential Expression of Odorant Binding Protein Classes in the Olfactory Epithelium of the hawkmoth *Manduca sexta*: Histological Localization. VOGT, RICHARD G., JOHN T. JONES and KIMBERLY D. LOMMAN, *University of South Carolina.*

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## SLIDES

Saturday Morning – 8:00-11:45

Human Chemoreception VI: Olfactory Function and Dysfunction

Chairperson: Claire Murphy

- 8:00 #212 Odorant Confusion Matrix Response Patterns: Relation To Medical History. DANIEL B. KURTZ, PAUL R. SHEEHE, PAUL F. KENT, DAVID E. HORNUNG, THERESA L. WHITE, STEVEN L. YOUNGENTOB, JAMES E. SCHWOB, MAXWELL M. MOZELL, ELIZABETH M. BELKNAP and PRECHA EMKO, *Clinical Olfactory Research Center, SUNY Health Science Center, Syracuse, NY 13210.*
- 8:15 #213 Chemosensory (Olfactory) Event-related Potentials in Patients with Dementia Associated with Parkinsonism. W. JAMES EVANS, LIYING CUI and DANIEL D. TRUONG, *Department of Neurology, University of California, Irvine.*
- 8:30 #214 Topical Corticosteroid Treatment of Nasal/Sinus Disease Olfactory Loss. A. MOTT<sup>2</sup>, D. LAFRENIERE<sup>2</sup>, A. APTER<sup>2</sup>, C. SAMPSON<sup>1</sup>, <sup>1</sup>*University of CT Health Center,* <sup>2</sup>*School of Medicine.*
- 8:45 #215 Sensory- and Cognition-Based Olfactory Functioning in Huntington's Disease. STEVEN NORDIN<sup>1,2</sup>, CARLA VIAZCAN<sup>2</sup>, KRISTI ACKERMAN<sup>2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*UCSD Medical Center,* <sup>2</sup>*San Diego State University.*
- 9:00 #216 G-Protein Deficient Pseudopseudohypoparathyroid Patients Evidence Normal Olfactory Function. RICHARD L. DOTY, ALBERTO D. FERNANDEZ, DONALD A. MCKEOWN, *Smell and Taste Center, Department of Otorhinolaryngology: Head and Neck Surgery, University of Pennsylvania, Philadelphia, PA*, MICHAEL A. LEVINE, *Department of Medicine, Division of Endocrinology and Metabolism, Johns Hopkins School of Medicine, Baltimore, MD* and ARNOLD MOSES, *Department of Medicine State University of New York Health Science Center, Syracuse, NY.*

9:15 #217 Cross-adaptation of Sweaty-Smelling 3-Methyl-2-Hexenoic Acid by a Structurally-Similar, Pleasant-Smelling Odorant. JOHND. PIERCE, JR., XIAO-NONG ZENG, EVGUENY V. ARONOV, GEORGE PRETI and CHARLES J. WYSOCKI, *Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104-3308.*

9:30 #218 Evidence For a New Perceptual Ability: Determining Which of Two Individual Scents is on Top. ROBERT E. JOHNSTON, *Cornell University.*

9:45 #219 Empirical Test of Models of Odor Interaction. MATS J. OLSSON, WILLIAM S. CAIN and FRANC T. SCHIET, *John B. Pierce Laboratory and Yale University.*

10:00 #220 Olfactory Dysfunction in the Elderly: Identification of Potential Precursors. CLAIRE MURPHY<sup>1,2</sup>, JILL RAZANI<sup>1</sup>, TERENCE M. DAVIDSON<sup>2</sup>, ALFREDO A. JALOWAYSKI<sup>2</sup>, <sup>1</sup>*San Diego State University,* <sup>2</sup>*UCSD Medical Center.*

10:15 Refreshment Break

Olfactory Receptors: Gene Organization

Chairperson: Linda Buck

10:30 #221 Genome Analysis of Human Olfactory Receptors: Gene Clusters, Diversity and Individual Variation. D. LANCET, N. BEN-ARIE, U. GAT, S. HORN-SABAN, M. KHEN, M. NATOCHIN, E. NEKRASOVA and N. WALKER, *Weizmann Institute.*

10:45 #222 The Genomic Organization and Regulation of Olfactory Receptor Genes. R. REED, K. SCHRADER, A. OLSEN, A.M. CUNNINGHAM, R.Y-L. TSAI, P. QASBA and I. GRIFF, *Howard Hughes Med. Institute, Johns Hopkins School of Medicine.*

11:00 #223 Expression of Olfactory Receptor Chimeras. TIMOTHY S. MCCLINTOCK and MICHAEL R. LERNER, *Yale University School of Medicine.*

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11:15 #224 Identification of Olfactory Genes by Single *P*-element Mutagenesis of Inbred *Drosophila melanogaster*. ROBERT R.H. ANHOLT, *Depts. of Zoology and Biochemistry, North Carolina State Univ., Raleigh, NC 27695*, RICHARD F. LYMAN and TRUDY F.C. MACKAY, *Dept. of Genetics, North Carolina State Univ., Raleigh, NC 27695*.

11:30 #225 Expression of Odorant Receptor Proteins During Postembryonic Development in Zebrafish. CHRISTINE A. BYRD<sup>1</sup>, RICHARD G. VOGT<sup>2</sup> and PETER C. BRUNJES<sup>1</sup>, <sup>1</sup>*University of Virginia*, <sup>2</sup>*University of South Carolina*.

#### Saturday Afternoon

11:45 ACheMS Business Meeting

1:00 Luncheon for Education Workshop

3:30 Education Outreach Workshop

*Organizers: Wayne Silver and Celeste Wirsig-Wiechmann*

#### POSTERS

#### Saturday Morning – 8:00-1:00 pm

*Animal Behavior III: Chemical Ecology*

*Olfactory Central Pathways II*

*Anatomy/Physiology and Transduction II: Gustatory and Others*

#226 P1 Bradykinin Induces Attachment Of The Barnacle *Balanus Amphitrite* (Darwin). MARION MCCLARY, JR., *Duke University Marine Laboratory*.

#227 P2 Reiterative Responses to Single Strands of Odor Promote Sustained Upwind Flight and Odor Source Location by Moths. N.J. VICKERS and T.C. BAKER, *Iowa State University*.

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#228 P3 A field test of the influence of odors from conspecifics on den selection in the spiny lobster *Panulirus argus*. N. DEAN PENTCHEFF, *Biological Sciences, Univ. of South Carolina*, GABRIELLE A. NEVITT, *Institute for Neurosciences, Univ. of Oregon*, KENNETH J. LOHMANN, *Dept. of Biology, Univ. of North Carolina*, RICHARD K. ZIMMER-FAUST, *Biol. Sciences, Univ. of South Carolina*.

#229 P4 Measuring Olfactory Stimulus Samples of Lobsters Orienting in a Turbulent Plume. JENNIFER A. BASIL AND JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory, Woods Hole MA 02543*.

#230 P5 How Blue Crabs (*Callinectes sapidus*) Find their Prey in Nature: I. Measurement and Modeling of Odor Plumes in Turbulent Flows. C. FINELLI, D.S. WETHEY, N.D. PENTCHEFF and R.K. ZIMMER-FAUST, *University of South Carolina, Columbia, SC 29208*.

#230a P6 How blue crabs (*Callinectes sapidus*) find their prey in nature: II. Mechanisms of orientation in turbulent odor plumes. N.D. PENTCHEFF, R.K. ZIMMER-FAUST, C. FINELLI and D.S. WETHEY, *Univ. of South Carolina, Columbia, SC 29208*.

#231 Withdrawn

#232 P7 Regulation of Gender-Specific Chemosensory Behaviors in Fiddler Crabs: Electrophysiological Properties of Male and Female Chemoreceptor Neurons. MARC WEISSBURG and C. DERBY, *Biology Dept., Georgia State University, Atlanta, GA*.

#233 P8 Perception of Odor Mixtures by the Spiny Lobster: Influence of Mixture Interactions on Behavior. WILLERT LYNN, ELIZABETH MEYER, CECIL PEPIATT AND CHARLES DERBY, *Dept. of Biology, Georgia State University*.

#234 P9 Novel Water, Thyroxine, and the Timing of Olfactory Imprinting in Coho Salmon (*Oncorhynchus kisutch*). ANDREW H. DITTMAN, THOMAS P. QUINN, *School of Fisheries, University of Washington, Seattle, WA 98195* and GABRIELLE A. NEVITT, *Institute of Neuroscience, University of Oregon, Eugene, OR 97403*.

#235 P10 Classically Conditioned Skin Potential Changes as a Behavioral Measure of Olfactory Response in the Tiger Salamander. K.M. DORRIES, J. WHITE and J.S. KAUER, *Neuroscience Program, Tufts/NEMC, Boston, MA 02111*.

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- #236 P11 Dimethyl disulfide (DMDS) - a sex attractant pheromone in golden hamsters? Lack of sex differences in attraction to DMDS and lack of androgen control of attraction to DMDS in males. ARAS PETRULIS and ROBERT E. JOHNSTON, *Cornell University*.
- #237 P12 Person Identification: Can Dogs Match-to-Sample Scents from Different Sites on the Skin of Familiar and Unfamiliar People? W.J. CARR, MICHELLE GABLER, TINA MANWILLER, JUNE OSWALD, LANA RUSSECK and COURtenay WALLACE, *Beaver College*.
- #238 P13 A Novel Gland in the Nephropore of the Lobster, *Homarus americanus*: a Site for the Production of Chemical Signals? PAUL BUSHMANN and JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543*.
- #239 P14 Urine as a chemical signal in lobster dominance recognition. THOMAS BREITHAUPT, CHRISTY KARAVANICH and JELLE ATEMA, *Boston Univ. Marine Progr., Marine Biol. Lab., Woods Hole, MA*.
- #240 P15 High Specificity of the Sea Lamprey Olfactory System to Four Classes of Bile Acids. WEIMING LI and PETER W. SORENSEN, *Dept. of Fisheries and Wildlife, University of Minnesota, St. Paul, MN 55108*.
- #241 P16 Isolation of Potential Musth-Alerting Signals from Temporal Gland Secretions of Male Asian Elephants (*Elephas maximus*), a new method. L.E.L. RASMUSSEN, T. E. PERRIN and R. GUNAWARDENA, *Dept. of Chemistry, Biochemistry & Molecular Biology, Oregon Graduate Institute, Beaverton, OR 97006*.
- #242 P17 Immunohistochemical Localization of Two Protein Precursors of the Axillary Odor. A.I. SPIELMAN<sup>1</sup>, G. TURNER<sup>1</sup>, X-N. ZENG<sup>3</sup>, J.J. LEYDEN<sup>2</sup> and G. PRETI<sup>2,3</sup>, <sup>1</sup>*Basic Science Division, New York Univ. Coll. Dentistry, New York*; <sup>2</sup>*Dept. of Dermatology, Univ. of Pennsylvania*; <sup>3</sup>*Monell Chemical Senses Center, Philadelphia, PA*.
- #243 P18 Proteinaceous Precursors to Human Axillary Odor: Apocrine Secretion Odor Binding Proteins. A.I. SPIELMAN<sup>1</sup>, X-N. ZENG<sup>3</sup>, J.J. LEYDEN<sup>2</sup> and G. PRETI<sup>2,3</sup>, <sup>1</sup>*Basic Science Division, New York Univ., Coll. Dent.*; <sup>2</sup>*Dept. of Dermatology, Univ of PA*; <sup>3</sup>*Monell Chemical Senses Center, Philadelphia, PA*.

Saturday, April 16

- #244 P19 Paradoxical Suppression of Evoked Activity in Rat Olfactory Bulbs Slices by the Dopaminergic Antagonist, Haloperidol. JOEL L. SOLIS<sup>1</sup>, WILLIAM T. NICKELL<sup>2</sup> and DAVID M. SENSEMAN<sup>1</sup>, <sup>1</sup>*Div. of Life Science, UTSA, San Antonio, TX* and <sup>2</sup>*Dept. Anat. & Cell Biol. UC, Cincinnati, OH*.
- #245 P20 CGP 55845, a GABAB Antagonist, Partially Reverses Glomerular Synaptic Depression in the Rat Olfactory Bulb Following Paired-Pulse Olfactory Nerve Stimulation. DAVID M. SENSEMAN<sup>1</sup>, JOEL L. SOLIS<sup>1</sup> and WILLIAM T. NICKELL<sup>2</sup>, <sup>1</sup>*Div. of Life Science, UTSA, San Antonio, TX*, <sup>2</sup>*Dept. Anat. & Cell Biol. UC, Cincinnati, OH*.
- #246 P21 Receptive Fields of Sex-Pheromone-Responsive Neurons in the Antennal Lobes of the Sphinx Moth, *Manduca sexta*. THOMAS HEINBOCKEL, THOMAS A. CHRISTENSEN and JOHN G. HILDEBRAND, *ARL Div. of Neurobiol., Univ. of Arizona, Tucson, AZ 85721*.
- #247 P22 Local Interneurons Define Functionally Distinct Layers in the Olfactory Glomeruli of the Spiny Lobster. C.E. DIEBEL and B.W. ACHE, *Whitney Laboratory, Univ. of Florida*.
- #248 P23 Dual Inhibitory Inputs to Olfactory Projection Neurons in the Olfactory Lobe of the Lobster. M. WACHOWIAK and B.W. ACHE, *Whitney Laboratory and Dept. Neuroscience, Univ. Florida, St. Augustine, FL 32086*.
- #249 P24 Statistical Characterization and Dynamical Analysis of Local Temporal Structure of Spike Trains. JON C. WEIL and STEPHEN P. FRACEK, JR., *University of North Texas and Center for Network Neuroscience*.
- #250 P25 Evidence For Glutamate As The Olfactory Nerve Neurotransmitter. D.A. BERKOWICZ, P.Q. TROMBLEY and G.M. SHEPHERD, *Interdepartmental Neuroscience Program and Section of Neurobiology, Yale University School of Medicine, New Haven, CT 06510*.
- #251 P26 Excitatory Amino Acid Receptor Antagonism Blocks Sensory Evoked Excitation of Rat Mitral Cells in Vitro. M. ENNIS, M. JIANG, L.A. ZIMMER and M.T. SHIPLEY, *University of Cincinnati College of Medicine*.
- #252 P27 Generators of the P90 Component of the Olfactory Evoked Potential in Rats. TU-UYEN NGUYEN and W. JAMES EVANS, *University of California, Irvine*.

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- #253 P28 Voltage Dependence of Long Duration Olfactory Nerve Evoked Synaptic Potentials in Rat Olfactory Bulb Mitral Cells. W.T. NICKELL, *U. of Cincinnati*, M.T. SHIPLEY, *U. of Maryland* and M.M. BEHBEHANI, *U. of Cincinnati*.
- #254 P29 CSERPs to Hedonically Pleasant and Unpleasant Stimuli. TYLER S. LORIG, DOUGLAS C. MATIA and JAMES M. TURNER, *Washington and Lee University*, STEPHEN WARRENBURG, *IFF* and GEORGE PRETI, *Monell Chemical Senses Center and University of Pennsylvania*.
- #255 P30 EEG Registration of Unconscious Odor Concentrations of Isoamyl Acetate: A Double Blind Experiment. GARY E. SCHWARTZ, JOHN P. KLINE, ZIYA V. DIKMAN and MERCEDES FERNANDEZ, *University of Arizona*.
- #256 P31 EEG Registration of Androstenone Odor Response in Androstenone Anosmic Subjects. GARY E. SCHWARTZ, GARY E., ZIYA V. DIKMAN, JOHN P. KLINE, MERCEDES FERNANDEZ and ERNEST H. POLAK, *University of Arizona*.
- #257 P32 Antisense Oligonucleotides to Perturb Calmodulin Function in Chemoresponse. JUNJI YANO, FRANK HECHT and JUDITH VAN HOUTEN, *University of Vermont, Dept. of Zoology, Burlington, VT 05405*.
- #258 P33 Intracellular pH During Chemoreception in *Paramecium*. DAVID DAVIS and JUDITH VAN HOUTEN, *Dept. of Zoology, University of Vermont*.
- #259 P34 Effect of Modulators of the Phosphatidyl Inositol System and the Arachidonic Acid System on Sweet Electrophysiological Taste Responses in Gerbil. SUSAN S. SCHIFFMAN, MARK S. SUGGS, *Duke University* and MICHAEL L. LOSEE, *The Nutrasweet Co.*
- #260 P35 Effect of Environmental Pollutants on Taste in Gerbil. SUSAN S. SCHIFFMAN, MARK S. SUGGS, M. B. ABOUDONIA, *Duke University*, H. T. NAGLE, *N.C. State University* and R. P. ERICKSON, *Duke University*.
- #261 P36 Taste-guided Unconditioned Licking to Suprathreshold Sodium Chloride Solutions is Unaffected by Selective Lingual Denervation. RAY CAUTHON, MIRCEA GARCEA and ALAN C. SPECTOR, *Dept. of Psychology, Univ. of Florida*.

Saturday, April 16

- #262 P37 Differences in the Spectral Tuning Properties of Front and Rear Legs of lobsters: Functional Adaptation? RAINER VOIGT, KEITH M. BAYHA and JELLE ATEMA, *Boston University Marine Program, Marine Biological Laboratory, Woods Hole, MA 02543*.
- #263 P38 Protein Tyrosine Kinases and Helix-Loop Helix Proteins in Taste Tissue. SUSAN MC LAUGHLIN and ROBERT F. MARGOLSKEE, *Roche Institute of Molecular Biology, Roche Research Center, Nutley, NJ 07110*.
- #264 P39 G Protein Phosphodiesterase Interactions in Sensory Transduction: Effector Interaction Peptides from the Transducins and Gustducin Activate Phosphodiesterases. NANCY SPICKOFSKY, WALED DANHO and ROBERT F. MARGOLSKEE, *Roche Institute of Molecular Biology, Roche Research Center, Nutley, NJ 07110*.
- #265 P40 A Metabotropic Glutamate Receptor is Expressed in Rat Taste Buds. N. CHAUDHARI, H. YANG, C. LAMP, *Department of Physiology, Colorado State Univ.* and S. ROPER, *Department of Anatomy and Neurobiology, Colorado State Univ.; Rocky Mountain Taste & Smell Center, Univ. Colorado Health Sciences Center*.
- #266 P41 Using CTA to Characterize Glutamate Receptors Underlying MSG Taste. C. CARTFORD, T. THAN, E. DELAY, *Dept. of Psychology, Regis Univ., Denver* and S. ROPER, *Dept. of Anatomy & Neurobiol, Colo St Univ; Rocky Mt. Taste and Smell Center, Univ. Colo Health Science Cntr.*
- #267 P42 Ultrastructure of Electrophysiologically Distinct Taste Receptors in *Necturus* Lingual Slices. D.E. STEWARD, A. BIGIANI and S.D. ROPER, *Dept of Anatomy & Neurobiology, Colorado State Univ.; Rocky Mt. Taste & Smell Center, Univ. Colorado Health Sciences Center*.
- #268 P43 Comparative Features Among Fungiform Papillae of Rabbits, Humans and Monkeys. INGLIS MILLER, JR., *Dept. of Neurobiology & Anatomy, Wake Forest University, Winston-Salem, NC 27103*.

Saturday, April 16

Saturday Evening – 6:30-9:45

6:30 Wine Tasting

*Organizers: Ann Noble and Judy Van Houten*

#### SLIDES

8:15 Symposium on Chemical Ecology

*Organizer: Judith Van Houten*

8:15 #269 S-12 Allelochemical Cues in the Marine Environment: Understanding Interactions Between Organisms and Their Secondary Metabolites. NANCY M. TARGETT, *University of Delaware, Graduate College of Marine Studies, Lewes, DE.*

8:45 #270 S-13 Marine Chemosensory Processes for Communication and Defense. WILLIAM FENICAL, *Scripps Institution of Oceanography, University of California, San Diego, La Jolla, CA.*

9:15 #271 S-14 The Chemical Ecology of Plant-Insect Interactions. DEANE BOWERS, *Museum and E.P.O. Biology, University of Colorado.*

#### POSTERS

Saturday Evening – 7:00-11:15 pm

*Physiology and Transduction III: Olfaction*

*Human Chemoreception VII: Olfaction and Gustatory Function and Dysfunction*

#272 P1 A Hyperpolarization-Activated Cation Conductance in Lobster Olfactory Receptor Neurons. FRANK COROTTO and WILLIAM MICHEL, *Department of Physiology, University of Utah, Salt Lake City, UT.*

Saturday, April 16

#273 P2 Specificity and Sensitivity of the Olfactory System of the Zebrafish, *Brachydanio rerio*. WILLIAM C. MICHEL, LARISSA M. LUBOMUDROV and AMY M. REED, *University of Utah, Department of Physiology, Salt Lake City, Utah 84108.*

#274 P3 Electrophysiological Properties of Olfactory Receptor Neurons *In Vitro*. THOMAS C. BOZZA, DAVID P. WELLIS, DALE D. HUNTER and JOHN S. KAUER, *Neuroscience Program, Tufts University School of Medicine, Boston, MA 02111.*

#275 P4 *In Vivo Responses of Single Olfactory Receptor Neurons in the Channel catfish, Ictalurus punctatus*. JIESHENG KANG and JOHN CAPRIO, *Louisiana State University.*

#276 P5 Sensory Activation of the Frog Ciliated Olfactory Neuron. JEAN-FRANCOIS ROSIN, TAO JIANG and DIDIER TROTIER, *EPHE, 1 av. des Olympiades, Massy, France.*

#277 P6 An Electrophysiological Survey of Frog Olfactory Cilia. STEVEN J. KLEENE, ROBERT C. GESTELAND and SHIRLEY H. BRYANT, *University of Cincinnati College of Medicine, Cincinnati, OH 45267-0521.*

#278 P7 Odorants-Induced Hyperpolarizing K<sup>+</sup>-Currents in Vertebrate Olfactory Neurons. B. MORALES, G. UGARTE, P. LABARCA, J. BACIGALUPO, *Dept. Biología, Fac. Ciencias, Universidad de Chile & Centro de Estudios Científicos de Santiago, Chile.*

#279 P8 Electrophysiological Responses to Carbon Dioxide from Olfactory Receptor Neurons in Mosquito Maxillary Palp Sensilla. ALAN J. GRANT, ROBERT J. O'CONNELL, *Worcester Foundation for Experimental Biology* and BRUCE WIGTON, *American Biophysics Corp.*

#280 P9 Dual IP<sub>3</sub>-gated Channels in Lobster Olfactory Receptor Neurons Have Different Ionic Selectivity and Display Kinetic Modes. D.A. FADDOOL and B.W. ACHE, *Whitney Laboratory and Depts. of Zoology and Neuroscience, Univ. of Florida, St. Augustine, FL 32086.*

#281 P10 IP<sub>3</sub> and Cyclic Nucleotides Elicit Opposite Membrane Potential Changes in Squid Olfactory Receptor Neurons. MARY T. LUCERO, and DAVID R. PIPER, *Department of Physiology, University of Utah Medical School, Salt Lake City, UT 84108.*

- #282 P11 Do Olfactory Neurons Respond to Odors with Simultaneous Activation of Two Second Messenger Pathways? NANCY E. RAWSON<sup>1</sup>, JOSEPH G. BRAND<sup>1,3,4</sup>, LOUIS D. LOWRY<sup>1,2</sup>, JOHN H. TEETER<sup>1,4</sup> and DIEGO RESTREPO<sup>1,4</sup>, <sup>1</sup>*Monell Chemical Senses Center*, <sup>2</sup>*Thomas Jefferson University*, <sup>3</sup>*Veterans Affairs Medical Center, Philadelphia, PA* and <sup>4</sup>*University of Pennsylvania*.
- #283 P12 Localization of Inositol 1,4,5-Triphosphate Receptors in the Olfactory Neuroepithelium of the Rat and Channel Catfish. D.L. KALINOSKI<sup>1</sup>, C. DELLACORTE<sup>1</sup>, B.Ph. MENCO<sup>2</sup> and D. RESTREPO<sup>1</sup>, <sup>1</sup>*Monell Chemical Senses Center* and <sup>2</sup>*Northwestern University*.
- #284 P13 Phospholipase C Gene Expression in Rat Olfactory Epithelium. FE C. ABOGADIE, RICHARD C. BRUCH, ALBERT I. FARBMAN, *Northwestern University*, ROBERT WURZBURGER and FRANK L. MARGOLIS, *Roche Institute of Molecular Biology*.
- #285 P14 Distribution and Phosphorylation properties of rat olfactory cyclic nucleotide-activated channel. OSAMU MATSUZAKI, ROBERTE. BAKIN and GABRIELE V. RONNETT, *Johns Hopkins U. School of Medicine*.
- #286 P15 Calcium Modulates the Rapid Kinetics of the Odorant-Induced Cyclic AMP Signal in Rat Olfactory Cilia. DONNA JAWORSKY, OSAMU MATZUSAKI, FELICE BORISY and GABRIELE RONNETT, *Johns Hopkins Medical Institution*.
- #287 P16 Follow-up Study: Efficacy of Group Therapy in the Treatment of Chemosensory Disorders. ALAN R. HIRSCH, *Smell & Taste Treatment and Research Foundation* and JONATHAN B. OSTER, *University of Illinois Medical School*.
- #288 P17 Inhalation of Odorants for Weight Reduction. ALAN R. HIRSCH, *Smell & Taste Treatment and Research Foundation* and RAMON GOMEZ, *University of Illinois Medical School, Chicago*.
- #289 P18 Diminished Taste Sensitivity in Patients Presenting to a Taste and Smell Clinic. B.J. COWART<sup>1,2</sup>, I.M. YOUNG<sup>2</sup>, R.S. FELDMAN<sup>3</sup> and L.D. LOWRY<sup>2</sup>, <sup>1</sup>*Monell Chemical Senses Center*, <sup>2</sup>*Jefferson Medical College*, <sup>3</sup>*Veteran's Administration Medical Center, Philadelphia, PA*.

- #290 P19 What do the Community-Dwelling Elderly Know About Chemosensory Loss and How do Losses Affect Their Behavior? MARCIA LEVIN PELCHAT, MONICA FIRELY, ROLAND SOTELLO and ALVIN OUTLAW, *Monell Chemical Senses Center*.
- #291 P20 Effects of Traumatic Brain Injury on Olfactory Function in Children. RANI NIJJAR<sup>2</sup>, JUDITH ANDERSON<sup>1</sup>, KRISTEN KONAR<sup>2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*UCSD Medical Center* and <sup>2</sup>*San Diego State University*.
- #292 P21 Reliability of the Odorant Confusion Matrix: Test-Retest. DANIEL B. KURTZ, PAUL R. SHEEHE, PAUL F. KENT, THERESA L. WHITE, DAVID E. HORNUNG, HERGERT N. WRIGHT, *Smell and Taste Disorders Clinic, SUNY Health Science Center, Syracuse 13210*.
- #293 P22 Odor Memory and Learning in Healthy Elderly vs. Young Adults: Recall, Recognition Memory, and Identification. LETICIA ACOSTA<sup>1</sup>, CHARLIE D. MORGAN<sup>1</sup>, STEVEN NORDIN<sup>1,2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*UCSD Medical Center* and <sup>2</sup>*San Diego State University*.
- #294 P23 Odor Detection Threshold is Impaired in Patients at Risk For Dementia. L. JILL RAZANI, *SDSU-UCSD Joint Doctoral Program*, STEVEN NORDIN and CLAIRE MURPHY, *UCSD Medical Center and San Diego State University*.
- #295 P24 Recognition Memory for Odorants and Visual Stimuli in Elderly at Risk for Alzheimer's Disease: A Comparison with Patients with Probable Alzheimer's Disease and Normal Elderly. JODI HARVEY<sup>2</sup>, STEVEN NORDIN<sup>1,2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>*UCSD Medical Center* and <sup>2</sup>*San Diego State University*.
- #296 P25 Odor Pleasantness Ratings Predict Food Preference Patterns. BRYAN RAUDENBUSH, PAUL FLASPOHLER and ROBERT A. FRANK, *University of Cincinnati, Cincinnati, OH*.
- #297 P26 A Smell Test Based on Odor Cognition of Japanese People. SACHIKO SAITO, *National Inst. of Bioscience and Human Technology, AIST, MITI, Ibaraki, Japan*, SAHO AYABE, *Inst. of Psychology, University of Tsukuba* and SHINJI SATOH, *Dept. of Medicine, Univ. of Tsukuba*.

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- #298 P27 Relative Independence of Odor Quality Discrimination and Odor Detection in Aging. RENE A. DEWIJK<sup>1</sup>, MARIA NORDIN<sup>3</sup>, WILLIAM S. CAIN<sup>1</sup>, STEVEN NORDIN<sup>1,2</sup> and CLAIRE MURPHY<sup>1,2</sup>, <sup>1</sup>J.B. Pierce Laboratory & Yale Univ., <sup>2</sup>USCD Medical Center and <sup>3</sup>San Diego State Univ.
- #299 P28 The Conditioning of Anxiety to an Odor: A Possible Mechanism of Symptom Maintenance in "Sick Building Syndrome." PAUL D. NEWMAN, LLOYD HASTINGS and ROBERT A. FRANK, University of Cincinnati.
- #300 P29 Effects of Labeling on the Perception of Fat in Foods and Its Relationship to Preference. BEVERLY J. TEPPER and SUSAN E. SHAFFER, Rutgers University.
- #301 P30 Odor Memory Shows Directed Forgetting Effects. M.C. WILSON, R.L. METZGER, V.J. SCHILD and E.A. RODDY, Univ. of Tenn. at Chattanooga.
- #302 P31 Novelty and Context Determine Odor Retrieval Cue Effectiveness. RACHEL S. HERZ, University of British Columbia.
- #303 P32 Sensitivity to Warning Agents for Natural Gas. WILLIAM S. CAIN, J. ENRIQUE COMETTO-MUNIZ, ROBIN R. BABBITT and JANNEANE F. GENT, John B. Pierce Laboratory and Yale University.
- #304 P33 Masking Is a Matter of Perceived Intensity of Masker. EDWARD MONAHAN, WILLIAM S. CAIN and MATS J. OLSSON, John B. Pierce Laboratory and Yale University.
- #305 P34 Effect of Attention on the Chemosensory (Olfactory) Event-related Potential in Humans. HSIENC C. CHIANG and W. JAMES EVANS, Department of Neurology, University of California, Irvine.

Sunday, April 17, 1994

SLIDES

Sunday Morning – 8:00-11:45

Physiology and Transduction IV: Olfactory Receptor Cells

Chairperson: Lynn Kalinoski

- 8:00 #306 Initiation and Termination of Second Messenger Signaling in Olfactory Neurons. H. BREER, I. BOEKHOFF, S. SCHLEICHER and E. TAREILUS, Institute of Zoophysiology, University Stuttgart-Hohenheim, 70599 Stuttgart, FRG.
- 8:15 #307 Does Nitric Oxide Participate in Olfactory Transduction of L-arginine in Sea Lamprey Larvae? B.S. ZIELINSKI<sup>1</sup>, T.J. HARA<sup>2</sup>, J.K. OSAHAN<sup>1</sup>, E. WONG<sup>1</sup> and M. HOSSEINI<sup>1</sup>, <sup>1</sup>Univ. of Windsor, Canada and <sup>2</sup>Freshwater Institute, Dept. of Fisheries and Oceans, Winnipeg, Canada.
- 8:30 #308 Nitric Oxide Expression During Olfactory Neuron Development And Regeneration. A. JANEI. ROSKAMS, DAVID S. BREDT, TED DAWSON and GABRIELE V. RONNETT, Johns Hopkins Medical Institutions.
- 8:45 #309 Metabolic Activation Of A Potent Olfactory-Specific Toxicant, 2,6-Dichlorobenzonitrile (DCBN), By P450 2As. X. DING, J. SHENG and J. K. BHAMA, Department of Biological Chemistry, University of Michigan, Ann Arbor, MI 48109.
- 9:00 #310 Cytochrome p450 from the Olfactory Organ of the Spiny Lobster: Cloning, Sequencing and Cellular Localization. HENRY G. TRAPIDO-ROSENTHAL<sup>1,2</sup>, SEAN M. BOYLE<sup>2</sup>, STEVEN D. MUNGER<sup>2</sup>, ROBERT C. BARTEL<sup>1</sup>, MARGARET O. JAMES<sup>2</sup> and WILLIAM E.S. CARR<sup>2</sup>, <sup>1</sup>Bermuda Biological Station for Research, Bermuda and <sup>2</sup>The Whitney Laboratory, St. Augustine, Florida.

Sunday, April 17

Olfactory Central Pathways IV

Chairperson: William Michel

- 9:15 #311 Architecture and Connections of the Orbitofrontal Components of the Primate Olfactory Cortex. CHRISTIAN K.H. REYHER, *Department of Neurobiology, Max-Planck-Institut für Biophysikalische Chemie, Am Faßberg, D-37077 Göttingen, Germany.*

- 9:30 #312 EEG Registration of Suprathreshold Odor Concentrations of Isoamyl Acetate and Androstenone: Application of Chaos Analyses. GARY E. SCHWARTZ, ZIYA V. DIKMAN, JOHN P. KLINE and MERCEDES FERNANDEZ, *University of Arizona.*

- 9:45 #313 Magnetoencephalographically Identified Sources of Cortical Olfactory Activity in Man. G. KOBAL, B. KETTENMANN and H. STEFAN, *Univ. Erlangen-Nürnberg.*

10:00 Refreshment Break

Gustatory Central Pathways II

Chairperson: Steve Roper

- 10:15 #314 Localization of Human Gustatory Cortex Using Functional Magnetic Imaging. J. HIRSCH<sup>1,2</sup>, R. DELAPAZ<sup>1,2</sup>, N. RELKIN<sup>2</sup>, J. VICTOR<sup>2</sup>, L. BARTOSHUK<sup>3</sup>, R. NORRIS<sup>4</sup> and T.C. PRITCHARD<sup>4</sup>, <sup>1</sup>*Memorial Sloan-Kettering Cancer Center, New York, NY*, <sup>2</sup>*Cornell University Medical College, New York, NY*, <sup>3</sup>*Yale University School of Medicine, New Haven, CT* and <sup>4</sup>*The Pennsylvania State University, Hershey, PA.*

Sunday, April 17

- 10:30 #315 Evidence For A Relationship Between the Morphology and Response Properties of Gustatory Neurons in the Nucleus of the Solitary Tract. WILLIAM E. RENEHAN<sup>1</sup>, ZHIGAO JIN<sup>1</sup>, XUEGUO ZHANG<sup>1</sup> and LAURA SCHWEITZER<sup>2</sup>, <sup>1</sup>*Henry Ford Hospital, Case Western Reserve Univ.*, <sup>2</sup>*University of Louisville School of Medicine.*

- 10:45 #316 Taste-Induced c-fos Expression in the Rat Hindbrain. CERIEN STREEFLAND, ESZTER FARKAS and FRANS W. MAES, *Groningen Center for Behavioral and Cognitive Neurosciences (BCN), Dept. Animal Physiology, University of Groningen, P.O. Box 14, 9750 AA Haren, The Netherlands.*

- 11:00 #317 Nucleus S: A New Landmark for Taste in the Brain Stem. L.D. SAVOY, M.E. FRANK and T.P. HETTINGER, *University of Connecticut Health Center, Farmington, CT.*

- 11:15 #318 Recognition of Deficient Nutrient Intake Scanned by a Functional MRI in the Brain of Rat with L-lysine Deficiency. K. TORII<sup>1,2</sup>, T. YOKAWA<sup>1</sup>, E. TABUCHI<sup>1</sup> and T. ONO<sup>3</sup>, <sup>1</sup>*Torii Nutrientstasis Project, ERATO, Research Development Corporation of Japan, Japan*, <sup>2</sup>*Ajinomoto Co. Inc., Japan*, <sup>3</sup>*Toyama Med. & Pharmaceu. Univ., Japan.*

- 11:30 #319 The Influence of Conditioned Preferences in the Rat Nucleus Tractus Solitarius: Only a Matter of Time. B.K. GIZA<sup>1</sup>, K. ACKROFF<sup>2</sup>, A. SCLAFANI<sup>2</sup>, S.A. MCCaughey<sup>1</sup> and T.R. SCOTT<sup>1</sup>, <sup>1</sup>*Dept Psychol, Univ Delaware, Newark, DE 19716*; <sup>2</sup>*Dept Psychol, Brooklyn Col, Brooklyn, NY 11210.*

POSTERS

Sunday Morning – 8:00-11:45

- Human Chemoreception VIII: Gustatory Function and Dysfunction  
Olfactory Central Pathways V: Anatomy  
Genetics of Chemoresponse  
Taste Systems: Regeneration, Development, Evolution*

Sunday, April 17

- #320 P1 Effect of solvent and rinsing in human taste sensitivity to PTC and NaCl. SUSUMU MATSUOKA and MICHAEL O'MAHONY, *Dept. of Food Science and Technology, University of California, Davis.*
- #321 P2 Perception of and Preference for Sweetness in Foods by Japanese and Australians. G.A. BELL, J. PRESCOTT, R. GILLMORE, S. ALLEN, S. KORAC, *Sensory Research Centre, CSIRO, M. YOSHIDA and K. YAMAZAKI, Chuo Univ., Tokyo.*
- #322 P3 A Heuristic Model of Sensory Adaptation. DONALD H. McBURNEY, *University of Pittsburgh* and CAREY D. BALABAN, *University of Pittsburgh.*
- #323 P4 Strong Acids Are Indiscriminable at Equal pH. PAUL A.S. BRESLIN and GARY K. BEAUCHAMP, *Monell Chemical Senses Center.*
- #324 P5 Qualitative Evaluation of Taste Stimuli by Cross-Modality Matching with a Color System. JEAN-XAVIER GUINARD, LISA ROSS, ANGELITA MARIN DE GUTIERREZ, *The Pennsylvania State University.*
- #325 P6 Dietary Fat Intake Alters the Selection of Discretionary Fat. SHIRLEY WAGER PAGE, *USDA/APHIS/DWRC and Monell Chemical Senses Center, Philadelphia, PA 19104* and RICHARD D. MATTES, *Monell Chemical Senses Center.*
- #326 P7 Gustatory Function After Oral Maxillofacial Surgery. A. MOTT<sup>2</sup>, D. SHAFER<sup>1</sup>, D. MILLER<sup>1</sup>, D. SANGER<sup>1</sup>, M. BANKI<sup>1</sup>, L. NORTON<sup>1</sup>, *Univ. of CT Health Center, Farmington, CT* <sup>1</sup>*School of Dental Med.*, <sup>2</sup>*School of Med.*
- #327 P8 Epidemic Phantogeusia. ALAN R. HIRSCH, *Smell & Taste Treatment and Research Foundation* and MARK A. DREXLER, *University of Illinois Medical School, Chicago.*
- #328 P9 Response Properties of Crayfish Local Deutocerebral Interneurons following Stimulation of the Olfactory Pathway by Odorants. DE FOREST MELLON, JR., *University of Virginia.*
- #329 P10 Differential Effects of BAP Application Suggests the Olfactory Cortex is Inherently Susceptible to Alzheimer's Disease. J.A. LONDON, L. NIEGO and T.S. DONTA, *UCONN Health Center, Farmington, CT.*
- #330 P11 Ultrastructural study of serotonergic innervation of olfactory glomeruli in adult rats. WEILIN LIU and MICHAEL T. SHIPLEY, *University of Cincinnati.*

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- #331 P12 Connections of the Olfactory Bulb in Chinook Salmon. STUART P. MATZ, GREG T. HOFELDT and TERRY T. TAKAHASHI, *Institute of Neuroscience, U of Oregon, Eugene, OR 97403.*
- #332 P13 Ultrastructural Characterization of Tyrosine Hydroxylase and GABA Immunoreactive Processes in Rat Olfactory Bulb Glomeruli. JUAN C. BARTOLOMEI and CHARLES A. GREER, *Sections of Neurosurgery & Neurobiology, Yale Univ. Sch. Med., New Haven, CT 06510.*
- #333 P14 Topological Distribution of Olfactory Receptor Cell Axons in Olfactory Bulb Glomeruli: A Confocal Microscope Analysis of DiI Staining. JEFFREY M. DEMBNER and CHARLES A. GREER, *Sections of Neurosurgery & Neurobiology, Yale Univ. Sch. Med., New Haven, CT 06510.*
- #334 P15 Is there a Difference in Somatic Granule Cell Spines Between Male Ferrets at Different Sexual States? ELKE WEILER, *Dept. of Zoology, University of Tübingen, Auf der Mergentheide 28, D-72076 Tübingen, Germany.*
- #335 P16 Olfaction in Rats Treated with 400 mg/kg 3-Methylindole. ANGELA K. SETZER, *The Pennsylvania State University*, BURTON M. SLOTNICK, *The American University.*
- #336 P17 Anatomical and Electrophysiological Identification of Neurons in the Caudal Layers of the Salamander Olfactory Bulb. R.E. MALONEY, JR. and K.A. HAMILTON, *Department of Cellular Biology and Anatomy, Louisiana State University Medical Center, Shreveport, LA 71130.*
- #337 P18 Behavioral-Genetic Studies of Olfactory Perception. NANCY L. SEGAL<sup>1</sup>, TARI D. TOPOLSKI<sup>2</sup>, MICHELLE GRIMES<sup>1</sup>, STEVEN.M. WILSON<sup>2</sup> and KATHLEEN W. BROWN<sup>1</sup>, <sup>1</sup>*California State University, Fullerton*, <sup>2</sup>*University of Colorado.*
- #338 P19 Discrimination of Odortypes Determined by the Major Histocompatibility Complex Among Outbred Mice. KUNIO YAMAZAKI<sup>1</sup>, GARY K. BEAUCHAMP<sup>1</sup>, JUDITH BARD<sup>2</sup> and EDWARD A. BOYSE<sup>2</sup>, <sup>1</sup>*Monell Chemical Senses Center, Phila., PA*, <sup>2</sup>*Univ. of Arizona, Tucson, AZ.*
- #339 P20 acj6, A Gene Affecting Olfactory Behavior and Physiology. PETER CLYNE, ELIZABETH VALLEN, RICHARD AYER and JOHN CARLSON, *Department of Biology, Yale University.*

Saturday, April 17

- #340 P21 Mouse Inbred Strain Taste Sensitivity to Acids. J.D. BOUGHTER, JR. and GLAYDE WHITNEY, *Program in Neuroscience, Florida State University.*
- #341 P22 C3.SW Congenic SOA- taster Mice: The Taster Allele on a Demitaster Genomic Background. J.D. BOUGHTER, JR. and GLAYDE WHITNEY, *Program in Neuroscience, Florida State University.*
- #342 P23 SW.B6 SOA-Nontaster Congenic Strains: Completion of a Quartet and Testing with other Substances. DAVID B. HARDER, KIMBERLEY S. GANNON and GLAYDE WHITNEY, *Department of Psychology, Florida State University.*
- #343 P24 Strain Differences in Gustatory Responses to Amino Acids in Rainbow Trout, *Oncorhynchus mykiss*. TOSHIAKI J. HARA, *Department of Fisheries and Oceans, Freshwater Institute, Winnipeg, Canada*, J. CAROLSFELD, *Dept. of Biol., Univ. of Victoria, Canada* and S. KITAMURA, *Nikko Lab., Natl. Res. Inst. Aquaculture, Japan.*
- #344 P25 Responses to Water by the Chorda Tympani Nerve May Be Aberrant After Regeneration. PETER CAIN and MICHAEL A. BARRY, *Dept. of BioStructure and Function, University of Connecticut Health Center.*
- #345 P26 Taste Responses from the Chorda Tympani Nerve in the Senescence-Accelerated Mouse. KOUSEI MIWA, *Dept. of Ped. Dent.*, SANAE KAWAMURA, HAJIMU UEBAYASHI, KEIICHI TONOSAKI and YASUSHI FUKAMI, *Dept. of Oral Physiol., Sch. of Dent., Asahi Univ., 1851 Hozumi, Hozumi-cho, Motosu-gun, Gifu 501-02, Japan.*
- #346 P27 Diet-Induced Plasticity in Taste Cells Modifies Feeding in an Insect Model, *Manduca sexta*. JOHN I. GLENDINNING, *University of Arizona.*
- #347 P28 Timecourse of Saline-Induced Recovery of the Gustatory System in Sodium-Restricted Rats. ROBERT E. STEWART and DAVID L. HILL, *University of Virginia.*
- #348 P29 Development of the Enhanced Neural Response to NaCl in Fischer 344 Rats. SUZANNE I. SOLLARS, GLENN E. SCHAFE and ILENE L. BERNSTEIN, *University of Washington.*
- #349 Withdrawn

Sunday, April 17

- #350 P30 Taste Papilla Morphogenesis in Rat Tongue Organ Culture. J.P. MBIEN, *School of Dentistry*, D. MACCALLUM, *Medical School* and C.M. MISTRETTA and *Dentistry, Univ. of Michigan, Ann Arbor, MI 48109.*
- #351 P31 Multiple Progenitors from Local Epithelium Form Taste Buds in Mice. LESLIE M. STONE, THOMAS E. FINGER, *University of Colo. Hlth. Sci. Ctr.* and SEONG-SENG TAN, *Univ. of Melbourne, Australia.*
- #352 Withdrawn
- #353 P32 The Distribution of Tenascin and Syndecan during Fungiform Papilla Morphogenesis. J. MORRIS-WIMAN and L. BRINKLEY, *University of Florida Dental College.*
- #354 P33 Structural Aspects of Vertebrate Taste Organ Phylogeny. K. REUTTER and M. WITT, *Univ. Tübingen.*
- #355 P34 Ultrastructure of the Taste Disk of the African Clawed Frog, *Xenopus laevis*. M. WITT and K. REUTTER, *Institute of Anatomy, University of Tübingen, Germany.*

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