

The 30th Annual East Coast Nerve Net

April 2-4, 2004

Friday p.m., April 2

5:30 pm *Welcome reception, Swope. Spirits, beer, wine, soft drinks, and hors d'oeuvre provided.*

Reminder: please set up your posters before the Grass lecture.

6:30 pm *Dinner*

8:00 pm *Grass Foundation Lecture*

Michale Fee
Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology

“Songs, Sequences, and Time: Neural mechanisms of vocal control in the songbird”

9:00-11:00 *Post-Lecture get-together, Poster area, Swope. Beer, wine, and soft drinks provided.*

The Organizing Committee is extremely grateful for the patronage of the Grass Foundation



Saturday a.m., April 3

7:00-8:15 *Breakfast in Swope*

8:30-10:15 *Behavior and Learning*

8:30 FROM DECISION TO CAPTURE: HIGH-SPEED VIDEO ANALYSIS OF
DRAGONFLY PREY PURSUIT BEHAVIOR
Rebecca Seaman and Robert Olberg. Union College

8:45 OPERANTLY CONDITIONING A MOLLUSCAN SEMI-INTACT
PREPARATION TO SHOW LEARNING AND LONG-TERM MEMORY IN
THE DISH
Michael R. Lowe and Gaynor E. Spencer. Brock University

9:00 PATTERNS OF ESCAPE CIRCUIT ACTIVATION IN JUVENILE CRAYFISH
DURING PREDATOR ATTACKS
Jens Herberholz, Marjorie Sen and Donald H. Edwards. Georgia State University

9:15 KINEMATIC ANALYSIS OF SOFT-BODIED LOCOMOTION
Russell Benuck and Barry Trimmer. Tufts University

9:30 THE ROLE OF CUTICULAR PHEROMONES AS CHEMOSENSORY STIMULI
IN COURTSHIP CONDITIONING OF *DROSOPHILA*.
Kathleen Siwicki, Paul Riccio, Lisa Ladewski, Stephanie Cross, and Jean-Francois
Ferveur. Swarthmore College and University of Burgundy.

9:45 ATTACK OF THE MUTANT FLIES; SELECTIVE INHIBITION OF SYNAPTIC
TRANSMISSION IN DOPAMINE AND SEROTONIN NEURONS AFFECTS
DROSOPHILA AGGRESSION.
Eric M. Black and Edward A. Kravitz. Harvard Medical School

10:00 "DING, DING ROUND II": AN ANALYSIS OF SOCIAL LEARNING AND
MEMORY IN *DROSOPHILA MELANOGASTER* FOLLOWING AGGRESSIVE
ENCOUNTERS
Alexandra Yurkovic and Edward A. Kravitz Department of Neurobiology,
Harvard University

10:15-10:45 *Coffee Break*

10:45-12:15 *Modulation*

10:45 DAY, NIGHT AND BRAIN SEROTONIN LEVELS IN LOBSTERS
Miriam Wildt, Erin Goergen, Jeanne Benton and Barb Beltz. Wellesley College

11:00 SEROTONERGIC MODULATION OF CRAYFISH HINDGUT ACTIVITY
Barbara Musolf and Donald H. Edwards. Georgia State University

- 11:15 DIFFERENT NEUROMODULATORY INPUTS EVOKE THE SAME MOTOR PATTERN VIA DIFFERENT CELLULAR MECHANISMS
Shari Hertzberg and Michael P. Nusbaum University of Pennsylvania
- 11:30 OCTOPAMINE MODULATES AXONS OF MODULATORY PROJECTION NEURONS IN *CANCER BOREALIS*
Jean-Marc Goillard, David J. Schulz, Valerie L. Kilman and Eve Marder. Volen Center, Brandeis University
- 11:45 HORMONAL MODULATION OF NEURONAL MODULATION
Matthew Kirby and Michael Nusbaum. University of Pennsylvania
- 12:00 ACTIVITY-DEPENDENT DIFFERENCES IN Ca^{2+} CLEARANCE FROM CRAYFISH MOTOR AXONS
Nidhi Rumpal and Gregory Lnenicka. University at Albany, SUNY

12:15-2:00 p.m. Lunch

Saturday p.m., April 3

2:00-3:15 *Synapses, Development and Signaling*

- 2:00 SIMULATION MODELING OF TRANSMITTER-RECEPTOR INTERACTIONS IN THE SYNAPSE
Sanjive Qazi, Aleksei Beltukov and Barry Trimmer. Parker Hughes Cancer Center and Tufts University
- 2:15 CONSTANT AMPLITUDE OF POSTSYNAPTIC RESPONSES FOR UNITARY BUT NOT BURSTING INPUT DURING GROWTH OF AN IDENTIFIED NEUROMUSCULAR JUNCTION IN THE LOBSTER, *HOMARUS AMERICANUS*
Stefan Pulver, Dirk Bucher, David Simon and Eve Marder. Brandeis University
- 2:30 SEX, FLASHING AND VIAGRA: THE ROLE OF MITOCHONDRIA IN FIREFLY LIGHT PRODUCTION. Barry Trimmer, June Aprille, Josephine Modica-Napolitano, Tufts University, University of Richmond and Merrimack College.
- 2:45 MANGANESE-ENHANCED NEURAL ATLAS OF *CHERAX DESTRUCTOR* USING MANGANESE-ENHANCED MAGNETIC RESONANCE IMAGING
Katie Brinkley, Nancy Kolodny, Susan Kohler, David Sandeman and Barb Beltz. Wellesley College
- 3:00 THE ESTABLISHMENT OF SOCIAL RELATIONSHIPS INFLUENCES NEURONAL PROLIFERATION IN LOBSTER BRAIN
Grace Kim and Barb Beltz. Wellesley College

3:00-6:00 *Break for posters and discussions in Swope (Coffee in Swope)*

- 6:00-7:00** *Cocktails in Meigs room*
- 7:00-8:30** *Dinner in Swope*
- 8:30-9:30** *So what do you think? The Nerve Net Trivia Contest
Hosted by Eve Marder, Meigs Room*
- 9:30-11:00** *Ed and Barry's Annual Exercise in Swank Sociality, Poster Area. Margaritas, beer,
wine, soft drinks provided.*

Sunday a.m., April 4

7: 30am *Breakfast Swope Center*

Participants are reminded that Swope check out time is 10:00 a.m.

9:30 -11:00 *Networks and Models*

- 9:30 MODELING NEUROMUSCULAR MODULATION IN *APLYSIA* WITH REAL,
HIGHLY VARIABLE MOTOR NEURON FIRING PATTERNS
Vladimir Brezina. Mt. Sinai School of Medicine
- 9:45 DOPAMINE RESPONSES AND INTRINSIC MEMBRANE PROPERTIES OF A
STOMATOGASTRIC MOTOR AXON
Dirk Bucher and Eve Marder. Brandeis University
- 10:00 DIFFERENT COMBINATIONS OF CELLULAR AND SYNAPTIC PROPERTIES
GENERATE SIMILAR NETWORK OUTPUT
Astrid Prinz and Dirk Bucher. Brandeis University
- 10:15 TIMING AND SPECIFICITY OF FEED-FORWARD INHIBITION IN THE
LATERAL GENICULATE NUCLEUS
Dawn Blitz and Wade Regehr. Harvard Medical School
- 10:30 TEMPORAL HYPERACUITY EMERGES FROM A NEURAL POPULATION
MODEL.
Janine Wotton, Michael Ferragamo. Gustavus Adolphus College
- 10:45 THE HALF-CENTER COMES, THE HALF-CENTER GOES: NOT ALL GASTRIC
MILL RHYTHMS REQUIRE RECIPROCAL INHIBITION BY THEIR RHYTHM
GENERATOR
Turgay Akay, D.E.Wood and M.P Nusbaum. University of Pennsylvania, School of
Medicine, Dept. of Neuroscience.

11:00-11:30 *East Coast Nerve Net Business Meeting*

11:30-1:00 *Lunch Swope Center*

Posters

TUNING OF MECHANORECEPTORS IN THE LOBSTER LATERAL ANTENNULE
Vanessa Miller-Sims and Jelle Atema. Boston University Marine Program

PREMOTOR ELEMENTS INVOLVED IN FEED-FORWARD CONTROL OF POSTURAL
MOTONEURONS DURING REFLEX ACTIVATION IN HERMIT CRAB, *PAGURUS*
POLLICARUS.
Krans Jacob and William Chapple. University of Connecticut

ACTIVE CIRCUIT THAT EMULATES A NEURON FOR ELECTROPHYSIOLOGICAL
INSTRUMENTATION.
Jiang Wu, John Coughlin, Tim Swaby, Shelley Silva, John DiCecco, Robert Hill, Ying Sun.
University of Rhode Island

FEMINIZATION OF CHOLINERGIC NEURONS ENHANCES AGGRESSIVE BEHAVIOR IN
MALE *DROSOPHILA MELANOGASTER*
Yick-Bun Chan, Sarah Certel, Edward Kravitz. Harvard Medical School

THE EFFECTS OF PROCTOLIN ON GASTRIC-PYLORIC INTERACTIONS IN THE
AMERICAN LOBSTER *HOMARUS AMERICANUS*
Christian Johnson, Patsy S Dickinson, Tyler Dunphy. Bowdoin College

IN-VIVO ANATOMICAL STUDIES IN CRAYFISH USING MANGANESE-ENHANCED
MAGNETIC RESONANCE IMAGING
Christopher Mims, Jens Herberholz, Xiaodong Zhang, Xiaoping Hu, Donald H. Edwards. Georgia
State University

THE EFFECT OF SOCIAL ISOLATION ON THE RESISTANCE REFLEX CIRCUIT IN
CRAYFISH LEGS
Fadi A. Issa, Daniel Cattaert, Donald H Edwards. Georgia State University

A NOVEL LEARNING MODEL FOR PHEROMONALLY DEPENDENT SUPPRESSION OF
COURTSHIP IN *DROSOPHILA MELANOGASTER*
Stephanie Cross, Kathleen Siwicki. Swarthmore College

MODULATORY FUNCTIONS OF CBI-11 IN FEEDING MOTOR PROGRAMS OF *APLYSIA*
Jin-Sheng Wu, J. Jing, K. R. Weiss. Mount Sinai Medical School

EXCITATORY ACTION OF DOPAMINERGIC INTERNEURON B65 CONTRIBUTES TO
EGESTIVE MOTOR PROGRAM PARAMETERS IN *APLYSIA*
Michael R. Due, Jian Jing, Klaude R. Weiss. Mt. Sinai School of Medicine

TRANSFER FUNCTIONS AND INFORMATION RATES OF NONSPIKING ELASTIC
STRAND RECEPTORS.
Björn Ludwar and Ralph A. DiCaprio. Ohio University

NONLINEAR RECEPTOR PROPERTIES ENHANCE INFORMATION TRANSFER RATE IN NONSPIKING AFFERENT NEURONS

Ralph A. DiCaprio. Ohio University

SOUND PRODUCTION AND SOUND DETECTION IN THE AMERICAN LOBSTER, *HOMARUS AMERICANUS*

Heidi Pye, Win Watson. University of New Hampshire

TRANSCRIPTIONAL REGULATION OF SYNAPTIC SPECIFICITY BY ENGRAILED AND ITS COFACTORS

Jonathan Blagburn. . Institute of Neurobiology, Univ. Puerto Rico

THE PHYSIOLOGICAL AND MORPHOLOGICAL BASIS FOR OLFACTORY PERCEPTION OF STEROIDS IN LOBSTERS

Alicia Fini*, Kimberlee Randall*, DeMond Boseman*, Debra Coglianesi, Doranne Borsay Horowitz, Stuart Cromarty, Gabriele Kass-Simon, Assumption College. University of Rhode Island & U.S. Environmental Protection Agency. *these authors contributed equally.

EFFECTS OF A FMRFAMIDE-LIKE PEPTIDE AND TEMPERATURE ON CRAYFISH HEART

Craig Wolsey and A.J. Mercier. Brock University

EVIDENCE FOR NEUROGENIC CONTROL OF CONTRACTIONS IN ISOLATED CRAYFISH HINDGUT

Megan Mottershead, A. Joffre Mercier. Brock University

VISUAL STIMULI AND HOUSING CONDITIONS INFLUENCE EXPLORATORY BEHAVIOR IN CRAYFISH

Drozd K. Joanna, Mercier A. Joffre, Brudzynski Stefan, Viscek Jennifer. Brock University

CYCLE-TO-CYCLE VARIABILITY OF NEUROMUSCULAR ACTIVITY IN *APLYSIA* FEEDING BEHAVIOR.

Vladimir Brezina, Charles C. Horn, Yuriy Zhurov, Alex Proekt, Klaudiusz R. Weiss. Mt. Sinai School of Medicine

HISTORY-DEPENDENT CHANGES IN THE CHARACTER OF FEEDING MOTOR PROGRAMS IN *APLYSIA* ARE ACCOMPANIED BY CHANGES IN THE CHARACTER OF MUSCLE CONTRACTIONS

Vladimir Brezina, Yuriy Zhurov, Alex Proekt, Klaudiusz R. Weiss. Mt. Sinai School of Medicine

EVIDENCE FOR NEURONAL SPECIFICITY OF FMRFAMIDE-RELATED PEPTIDES AT NEUROMUSCULAR JUNCTION OF *DROSOPHILA* LARVAE

Amanda Cull, Ruthann Nichols, A.Joffre Mercier. Brock University

MORPHOLOGICAL EXAMINATION OF AXONAL FUSION DURING THIN BUNDLE NERVE REGENERATION IN THE CLAWS OF *PROCAMBARUS CLARKII*

Katherin Martens, Hadley Horch. Bowdoin College

REGULATION OF SALIVARY GLAND AND DUCT ACTIVITY IN *APLYSIA CALIFORNICA*

Geidy E. Serrano and Mark W. Miller. Department of Anatomy and Institute of Neurobiology; University of Puerto Rico, Medical Sciences Campus, San Juan, PR.

SEXUAL DIFFERENTIATION OF IDENTIFIED NEUROMUSCULAR SYNAPSES IN
DROSOPHILA LARVAE

Kraig Theriault, Gregory A. Lnenicka. University at Albany

A COMPARTMENTAL MODEL OF THE ELECTRICALLY COUPLED AB-PD PAIR, THE
LOBSTER'S PYLORIC PACEMAKER

Cristina Soto-Trevino, Eve Marder, Pascale Rabbah, Farzan Nadim. New Jersey Institute of
Technology

MODULATION OF THE *CALLINECTES SAPIDUS* CARDIAC SYSTEM BY FMRFAMIDE-
RELATED PEPTIDES

Timothy Fort, M. W. Miller and V. Brezina. Institute of Neurobiology, University of Puerto Rico

SPIKE MEDIATED FACILITATION IN THE LP TO PD SYNAPSE

Robert LoMauro, Lian Zhou, Farzan Nadim. NJIT/Rutgers

COMBINATORIAL APPLICATION OF SEROTONIN, OCTOPAMINE, AND PROCTOLIN ON
SPONTANEOUSLY ACTIVE CHH NEURONS IN THE LOBSTER

Alo C. Basu, Edward A. Kravitz. Harvard Medical School

THERMOSENSITIVITY OF SYNAPTIC TRANSMISSION IN A DESERT-DWELLING
DROSOPHILA SPECIES

Amy E M Newman and R.M. Robertson. Queen's University

THERMOPROTECTION OF THE VENTILATORY MOTOR PATTERN IS CONFERRED VIA
APPLICATION OF OCTOPAMINE TO THE CNS OF THE LOCUST.

Gary Armstrong and R.M. Robertson. Queen's University

THE CONSTRUCTION OF MOVEMENT WITH BEHAVIOR-SPECIFIC AND BEHAVIOR-
INDEPENDENT MODULES

Jian Jing, Elizabeth C. Cropper, Itay Hurwitz, Klaudiusz R. Weiss. Mt Sinai School of Medicine

DECREASED CONDUCTION RELIABILITY AT HIGH TEMPERATURE IS ASSOCIATED
WITH INCREASED EXTRACELLULAR POTASSIUM

Tomas G.A. Money, Corinne I. Rodgers and R.M. Robertson. Queen's University

IS THE PYLORIC RHYTHM RECOVERY FROM DECENTRALIZATION ACTIVITY-
DEPENDENT?

Rosa Rodriguez and Jorge Golowasch. Dept of Biological Sciences, Rutgers University

IDENTIFICATION OF A TRANSCRIPT INDUCED BY WOUNDING IN THE CRAYFISH
LIMB.

Susan Bailey, Janell Stadler, Kelly Meinert, Jacob Merriman and Geoffrey Ganter. University of
New England

ORGANIZATION OF A ZEBRAFISH SEROTONIN RECEPTOR GENE.

Henning Schneider, Luke Fritzky, Himali Patel, Lester Myers. DePauw University

Presenters

Faculty

Ralph A. DiCaprio
Jonathan Blagburn
Vladimir Brezina
Katherin Martens
Jian Jing
Henning Schneider
Barry Trimmer
Janine Wotton
Vladimir Brezina
Kathleen Siwicki

Graduate Students

Vanessa Miller-Sims
Krans Jacob
Jiang Wu
Fadi A. Issa
Heidi Pye
Megan Mottershead
Drozd K. Joanna
Geidy E. Serrano
Kraig Theriault
Robert LoMauro
Alo C. Basu
Tomas G.A. Money
Rosa Rodriguez
Michael R. Lowe
Shari Hertzberg
Stefan Pulver
Russell Benuck
Nidhi Rumpal
Miriam Wildt
Barbara Musolf
Matthew Kirby
Gary Armstrong

Postdoctoral Research Associates

Yick-Bun Chan
Jin-Sheng Wu
Björn Ludwar
Cristina Soto-Trevino
Timothy Fort
Jens Herberholz
Dirk Bucher
Astrid Prinz
Jean-Marc Goillard
Dawn Blitz
Turgay Akay

Other

Christopher Mims
Michael R. Due
Sanjive Qazi

Undergraduates

Katie Brinkley
Christian Johnson
Stephanie Cross
Alicia Fini
Kimberlee Randall
DeMond Boseman
Craig Wolsey
Amanda Cull
Amy E M Newman
Susan Bailey
Rebecca Seaman
Eric M. Black
Alexandra Yurkovic
Grace Kim