

PROGRAM

24th ANNUAL EAST COAST NERVE NET

April 3-5, 1998

Sponsored by the Grass Foundation and the Marine Biological Laboratory

Friday, April 3

5:30 Cocktails and Dinner at the Swope Center

8:00 Plenary Session, Whitman Auditorium:

Presentation of the *1998 Mary Grass Undergraduate Research Presentation Scholars*: Patricia Harness, Amy J. L. Mason, Princy Quadros, Claire Edwards, and Paul F. Beglane.

Recital: "The Rime of the Ancient Scientist", Dr. Edward A. Kravitz, Harvard Medical School.

Grass Foundation Lecture

Dr. Alan Gelperin, Bell Labs/Lucent Technologies

**"Cellular and Computational Studies of Odor Oscillations,
Waves and Memory"**

Saturday, April 4

8:30 Synaptic depression and neuronal response dynamics. Frances S. Chance, Sacha B. Nelson and L. F. Abbott, Brandeis University.

8:45 The meaning of depression. Farzan Nadim, Yair Manor, and Eve Marder, Brandeis University.

9:00 Numerous peptides converge onto the same current in stomatogastric neurons of *Cancer borealis*. Andrew Swensen and Eve Marder, Brandeis University.

9:15 What is the neural code (at a constant duty cycle) for LP muscle contractions? Patricia Harness*, Lee Morris and Scott Hooper, Ohio University.

1998 East Coast Nerve Net Program

- 9:30 What is the complete neural code (with varying duty cycles) for dorsal dilator muscle contractions? Lee Morris and Scott Hooper, Ohio University.
- 9:45 Break
- 10:15 Motor pattern selection via projection neuron selection. Dawn M Blitz, Mark P Beenhakker and Michael P Nusbaum. Univ. Pennsylvania School of Medicine.
- 10:30 Frequency control of a slow oscillating neuronal circuit by a fast oscillating circuit. M. Bartos, F. Nadim, Y. Manor, E. Marder and M.P. Nusbaum, Univ. Pennsylvania School of Medicine.
- 10:45 Experience is everything: Prior exposure of the crab STG to the neurohormone corazonin enhances the STG response to a tachykinin-related peptide. Andy Christie and Mike Nusbaum, Dept. of Neuroscience, Univ. of Pennsylvania School of Medicine.
- 11:00 Neuromodulator immunoreactivity in developing *Homarus*: Sequential cotransmitter acquisition and transient neuropeptide staining. V. Kilman, V. Fenelon, K. Richards, V. Thirumalai, P. Meyrand, and E. Marder, Brandeis University.
- 11:15 Neuromodulation and the developing STG. Kathryn Richards, Barb Beltz and Eve Marder Lab, Brandeis University.
- 11:30 Dynamic stability in the STG. Jorge Golowasch, Brandeis University.
- 11:45 The effects of 5-HT precursor treatment on serotonergic neurons in the *Tritonia* swim CPG. David Fickbohm and Paul Katz, Georgia State University.
- Noon Lunch at the Swope Center.
- 1:30 Princy Quadros*, University of Richmond.
- 1:45 How different types of neurons process synaptic input to control somatic spiking? Dieter Jaeger and Volker Gauck, Emory University.
- 2:00 3-D chemosensing by ancient *Nautilus pompilius*. Jennifer A. Basil, Roger Hanlon, Sarah Sheikh, J. Stema, M.B.L.
- 2:15 Far field chemo-orientation in the American lobster, *Homarus americanus*: Effects of unilateral ablation and lesioning of the lateral antennule. Paul F. Beglane*, Frank W. Grasso, Jennifer A. Basil and Jelle Atema. Boston University Marine Program.
- 2:30 Food location by juvenile *Limulus polyphemus*. Aimee Murawski and Brian J. Robinson, Worcester Polytechnic Institute.
- 2:45 Break
- 3:00 Correlation between ultradian and circadian rhythms in cricket *Teleogryllus oceanicus*. Mathieu Lupien, Gerald Pollack, and Siegfried Hekimi, McGill University.

- 3:30 Beyond static receptors: Dynamic approaches to understand transmitter/receptor interactions. Sanjive Qazi, Aleksei Beltukov, and Barry Trimmer, Tufts University.
- 3:45 Kinematic and electromyographic analyses of proleg movements in *Manduca sexta*. Jim Belanger and Barry A. Trimmer, Tufts University.
- 4:00 Heterogeneity of muscarinic receptors in the tobacco hornworm, *Manduca sexta*. Alice Wang and Barry A Trimmer, Tufts University.
- 4:15 Mapping of nitric oxide synthase in the CNS of *Manduca sexta*: Developmental changes in expression by identified neurons. Ricardo M. Zayas, Sanjive Qazi, and Barry A. Trimmer, Tufts University.
- 4:30 Heat shock protects synaptic transmission in locust flight circuitry. Ken Dawson-Scully and R.M. Robertson, Queen's University.
- 4:45 The great escape: linking motor patterns with locust wing kinematics. Jeff W. Dawson and R. Meldrum Robertson, Queen's University.

Saturday Evening and Sunday Morning Poster Presentation Session

The electric organ discharge waveform characteristics of the Clearnose Skate (*Raja eglanteria*) compared to six other species of *Rajidae*. Jennifer Smith¹, Bradford O. Bratton¹, and Caral A. Luer². ¹Colby College, and ²Mote Marine Laboratory.

The lobster rearing and research facility of the New England Aquarium: Hatchery methods and techniques. Jason S. Goldstein, The New England Aquarium.

Serotonergic and octopaminergic neurosecretory neurons in the American lobster, *Homarus americanus*. S. Cromarty, R. Heinrich, M. Hörner, D.H. Edwards, and E.A. Kravitz, Harvard Medical School.

The roles of climate and evolution in determining species- specific glomerular numbers in the olfactory lobes of decapod crustaceans. Monaya Lee, Kashka Piech, Jeannie Benton, and Barb Beltz, Wellesley College.

Changes in behavior during the formation of social hierarchies in crayfish. Fadi A. Issa, Shih-Rung Yeh, Daniel A. Adamson, and Donald H. Edwards, Georgia State University.

Lability of serotonin immunolabeling in crayfish. Barbara Musolf, Ulrike Spörhase-Eichmann, and Donald H. Edwards, Georgia State University.

Neuronal coincidence detection by rectifying electrical synapses in crayfish. Donald H. Edwards, Shih-Rung Yeh, and Franklin B. Krasne, Georgia State University.

Effect of social experience on reflex responses of serotonergic neurons in crayfish. Joanne Drummond, Donald H. Edwards and Edward A. Kravitz, Georgia State University.

Cord stretch receptors of the australian freshwater crayfish, *Cherax destructor*. Joanne Drummond and David MacMillan, University of Melbourne.

A role for cyclic nucleotides in modulation of crayfish synapses by a neuropeptide. Amit Badhwar and A.Joffre Mercier, Brock University.

An examination of synaptic modulation by a crayfish neuropeptide. Maria Boldt and A. J. Mercier, Brock University.

Temperature dependence of serotonin modulation of neuromuscular transmission in the lobster. Claire Edwards*, Stephen Holt, Mary Kate Worden, University of Virginia.

Activity-dependent development of calcium buffering in crayfish motor axons. John M. Calabro and Gregory A. Lnenicka, State University of NY at Albany.

Modulation of encoding by a sensory neuron in the crab nervous system. J. T. Birmingham, L.F. Abbott, and E. Marder, Brandeis University.

Characterization of CaM KII in the nervous system of the lobster, *Panulirus interruptus*. Michelle D. Withers, Eve Marder, Mary Kennedy, and Leslie Griffith, Brandeis University.

Electrical signaling in an individual nerve cell: multi-site optical measurements and model predictions. Srdjan Antic, Michael L. Hines, and Dejan Zecevic, Yale Univ. School of Medicine.

Regulation of segmental oscillator frequency during fictive crawling in *Manduca sexta*. AJL Mason* and RM Johnston, Colby College.

The role of segmental sensory input on intersegmental coordination during fictive crawling in *Manduca sexta*. Patrick W. Fournier, Rebecca M. Johnston, Colby College.

Concentration and duration independent coding of olfactory information by cockroach antennal lobe projection interneurons. Stefan R. Pulver, Wilder T. Doucette, William C. Lemon, and Rebecca M. Johnston, Colby College.

Neural control of spermathecal contractions in the african migratory locust. Julie Clark and A.B. Lange, University of Toronto, Erindale Campus

Evidence for a polysynaptic path to Omega neuron in crickets (*Teleogryllus oceanicus*). Zen Faulkes and Gerald S. Pollack, McGill University.

Additional effect of myomodulin at arc neuromuscular junctions of *Aplysia*: evidence for presynaptic inhibition of transmitter release. Irina V. Orekhova , Paul J. Church, Vladimir Brezina, and Kladiusz R. Weiss, Mount Sinai School of Medicine.

Cerebral peptides 1 and 2 modulate feeding motor programs in *Aplysia*. Peter T. Morgan, Ray Perrins, Philip E. Lloyd, Joseph Goldfarb, and Kladiusz Weiss, Mount Sinai School of Medicine.

White noise analysis of cockroach tibial campaniform. Ralph A. DiCaprio¹, A. L. Ridgel² and S. N. Zill², ¹Ohio University and ²Marshall University.

Preservation of kicking behavior at extreme temperatures in locusts. J.W. Barclay, B.S. Wu, V.K. Walker, R.M. Robertson, Queen's University.

Quantification and distribution of locust tachykinins in the abdominal ganglia of *Locusta migratoria*. Rod Kwok, D.R. Nassel, A.B. Lange, and I. Orchard, University of Toronto.

The actions of leucomyosuppressin and proctolin on the cockroach midgut. Megumi Fusé and Ian Orchard, University of Toronto.

Quantification of leucokinin-like material in the blood feeding bug *Rhodnius prolixus*. Victoria TeBrugge, University of Toronto.

Developmental regulation of octopamine sensitivity in *Manduca sexta*. Herm Lehman and J. Sokolonicki, Hamilton College.

Alterations in temperature dependence of spontaneous currents following heat shock in *Drosophila* synapses. Shanker Karunanithi J. Barclay, H.L. Atwood, and R.M. Robertson, University of Toronto.

Antibodies to *Drosophila* PERIOD protein label cells in the CNS of cricket *Teleogryllus oceanicus*. Mathieu Lupien, Gerald Pollack, and Siegfried Hekimi, McGill University.

Interactions of serotonergic and octopaminergic neurons in lobsters. Ralf Heinrich, Stuart J. Cromarty, Michael Hörner, Donald H. Edwards, and Edward A. Kravitz, Harvard Medical School.

Pressure-triggered local degeneration in the body wall of a sea cucumber. Robert A. Hill¹ and Firoz Rahemtulla², ¹University of Rhode Island and ²University of Alabama.

Air movement “signals” do not play a role in courtship in the cricket *Teleogryllus oceanicus*. Véronique Givois, Gerald Pollack, and Rohini Balakrishnan, McGill University.

Interaction amongst FMRFamide-related peptides. Timothy J. Fort, University of Rhode Island.

Steering motor patterns during visual avoidance manoeuvres in *Locusta migratoria*. Jessica K. Lee and R.M. Robertson, Queen’s University.

GTP γ -dependent modulation of somatic and presynaptic calcium channels differ in sensitivity to botulinum Toxin C1. Paul J. Church, Mount Sinai School of Medicine

Noon, Sunday Lunch at the Swope Center.

*Mary Grass Scholars

Presenters

Undergraduates:

Jennifer Smith
Amy Mason
Paul Beglane
Monaya Lee
Patrick W. Fournier
Stefan R. Pulver
Claire Edwards
John M. Calabro
Fadi A. Issa
Aimee Murawski
Jessica K. Lee
Maria Boldt
Princy Quadros
Patricia Harness

Graduates:

Julie Clark
Amit Badhwar
Andrew Swensen
Peter T. Morgan,
J.W. Barclay
Jeff W. Dawson
Rod Kwok

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Frances S. Chance
Mathieu Lupien
Véronique Givois
Timothy J. Fort
Val Kilman
Kathryn Richards
Ken Dawson-Scully
Barbara E. Musolf

Postdocs:

Michelle D. Withers
Stuart Cromarty
Srdjan Antic
Zen Faulkes
Irina V. Orekhova
Jennifer A. Basil
Shanker Karunanithi
Sanjive Qazi
Ralf Heinrich
Jim Belanger
David Fickbohm
J.T. Birmingham
Farzan Nadim
Joanne Drummond

Faculty:

Herm Lehman
Robert A. Hill