

# The Journal of Neuroscience

The Official Journal of  
the Society for Neuroscience

July 1994  
Volume 14 Number 7

---

- 3985 **Feature Article:** Supervised Learning in the Brain  
*E.I. Knudsen*
- 3998 Prolonged Expression of AP-1 Transcription Factors in the Rat Hippocampus after Systemic Kainate Treatment  
*K.R. Pennypacker, L. Thai, J.-S. Hong, and M.K. McMillian*
- 4007 An FCCP-Sensitive  $CA^{2+}$  Store in Bullfrog Sympathetic Neurons and Its Participation in Stimulus-evoked Changes in  $[Ca^{2+}]_i$   
*D.D. Friel and R.W. Tsien*
- 4025 Vocal-Acoustic Pathways in a Teleost Fish  
*A.H. Bass, M.A. Marchaterre, and R. Baker*
- 4040 Cytosolic Free Calcium and Cell Death during Metabolic Inhibition in a Neuronal Cell Line  
*M.E. Johnson, G.J. Gores, C.B. Uhl, and J.C. Sill*
- 4050 Schwann Cells Induce Sprouting in Motor and Sensory Axons in the Adult Rat Spinal Cord  
*Y. Li and G. Raisman*
- 4064 Unique Profiles of the  $\alpha 1$ -,  $\alpha 2$ -, and  $\beta$ -Adrenergic Receptors in the Developing Cortical Plate and Transient Embryonic Zones of the Rhesus Monkey  
*M.S. Lidow and P. Rakic*
- 4079 Morphological Evidence That Hypothalamic Substance P-containing Afferents Are Capable of Filtering the Signal Flow in the Monkey Hippocampal Formation  
*C. Leranth and R. Nitsch*
- 4095 Distributed Processing of Pain and Vibration by the Human Brain  
*R.C. Coghill, J.D. Talbot, A.C. Evans, E. Meyer, A. Gjedde, M.C. Bushnell, and G.H. Duncan*
- 4109 Neuronal and Psychophysical Sensitivity to Motion Signals in Extrastriate Area MST of the Macaque Monkey  
*S. Celebrini and W.T. Newsome*
- 4125 Segmental Specificity of Neuronal Recognition during Synapse Formation between Identified Leech Neurons  
*D.C. Merz and P. Drapeau*
- 4130 Drug- and Behavior-associated Changes in Dopamine-related Electrochemical Signals during Intravenous Cocaine Self-Administration in Rats  
*A. Gratton and R.A. Wise*

- 4147 Activity-Dependent Expression and Distribution of M<sub>1</sub> Muscarinic ACh Receptors in Visual Cortex Neuronal Cultures  
*Y. Wang, Q. Gu, F. Mao, R.P. Haugland, and M.S. Cynader*
- 4159 Differential Effects of Chronic Antipsychotic Drug Treatment on Extracellular Glutamate and Dopamine Concentrations  
*B.K. Yamamoto and M.A. Cooperman*
- 4167 Distributed Aspects of the Response to Siphon Touch in *Aplysia*: Spread of Stimulus Information and Cross-Correlation Analysis  
*Y. Tsau, J.-y. Wu, H.-P. Höpp, L.B. Cohen, D. Schiminovich, and C.X. Falk*
- 4185 Role of Phosphorylation in Desensitization of Acetylcholine Receptors Expressed in *Xenopus* Oocytes  
*P.W. Hoffman, A. Ravindran, and R.L. Haganir*
- 4196 Kindling Induces the Long-lasting Expression of a Novel Population of NMDA Receptors in Hippocampal Region CA3  
*J.E. Kraus, G.-C. Yeh, D.W. Bonhaus, J.V. Nadler, and J.O. McNamara*
- 4206 Transforming Growth Factor  $\alpha$  (TGF $\alpha$ ) Expression in Degenerating Motoneurons of the Murine Mutant *Wobbler*: A Neuronal Signal for Astrogliosis?  
*M.-P. Junier, M. Couplier, N. Le Forestier, J. Cadusseau, F. Suzuki, M. Peschanski, and P.A. Dreyfus*
- 4217 Embryonic Neural Cell Adhesion Molecule (N-CAM) Is Elevated in the Denervated Rat Dentate Gyrus  
*P.D. Miller, S.D. Styren, C.F. Lagenaur, and S.T. DeKosky*
- 4226 Modulation of Skeletal Muscle Sodium Channels in a Satellite Cell Line by Protein Kinase C  
*R. Numann, S.D. Hauschka, W.A. Catterall, and T. Scheuer*
- 4237 Calcium Dependence of Hypoosmotically Induced Potassium Release in Cultured Astrocytes  
*A.S. Bender and M.D. Norenberg*
- 4244 Differential Regulation of the Release of the Same Peptide Transmitters from Individual Identified Motor Neurons in Culture  
*M.D. Whim and P.E. Lloyd*
- 4252 Distribution of  $\alpha_1$  Adrenoceptors in Rat Brain Revealed by *in situ* Hybridization Experiments Utilizing Subtype-Specific Probes  
*V.A. Pieribone, A.P. Nicholas, Å. Dagerlind, and T. Hökfelt*
- 4269 The Consistency, Extent, and Locations of Early-Onset Changes in Cortical Nerve Dominance Aggregates Following Injury of Nerves to Primate Hands  
*R.C. Kolarik, S.K. Rasey, and J.T. Wall*
- 4289 Gradual Tolerance of Metabolic Activity Is Produced in Mesolimbic Regions by Chronic Cocaine Treatment, while Subsequent Cocaine Challenge Activates Extrapyramidal Regions of Rat Brain  
*R.P. Hammer, Jr. and E.S. Cooke*
- 4299 Pharmacology of Novel GABA Receptors Found on Rod Horizontal Cells of the White Perch Retina  
*H. Qian and J.E. Dowling*

- 4308 Modulation of Gap Junctional Mechanisms during Calcium-Free Induced Field Burst Activity: A Possible Role for Electrotonic Coupling in Epileptogenesis  
*J.L. Perez-Velazquez, T.A. Valiante, and P.L. Carlen*
- 4318 Chronic Electroconvulsive Seizure (ECS) Treatment Results in Expression of a Long-lasting AP-1 Complex in Brain with Altered Composition and Characteristics  
*B.T. Hope, M.B. Kelz, R.S. Duman, and E.J. Nestler*
- 4329 Sodium Nitroprusside Evokes the Release of Immunoreactive Calcitonin Gene-Related Peptide and Substance P from Dorsal Horn Slices via Nitric Oxide-Dependent and Nitric Oxide-Independent Mechanisms  
*M.G. Garry, J.D. Richardson, and K.M. Hargreaves*
- 4338 Structure and Function of Retinal Ganglion Cells Innervating the Cat's Geniculate Wing: An *in vitro* Study  
*M. Pu, D.M. Berson, and T. Pan*
- 4359 Opioid Receptor Activation Is One Factor Underlying the Frequency Dependence of Mossy Fiber LTP Induction  
*B.E. Derrick and J.L. Martinez, Jr.*
- 4368 Axotomy Results in Delayed Death and Apoptosis of Retinal Ganglion Cells in Adult Rats  
*M. Berkelaar, D.B. Clarke, Y.-C. Wang, G.M. Bray, and A.J. Aguayo*
- 4375 GAP-43 Expression in Primary Sensory Neurons following Central Axotomy  
*M.S. Chong, M.L. Reynolds, N. Irwin, R.E. Coggeshall, P.C. Emson, L.I. Benowitz, and C.J. Woolf*
- 4385 Macromolecular Synthesis Inhibitors Prevent Oxidative Stress-induced Apoptosis in Embryonic Cortical Neurons by Shunting Cysteine from Protein Synthesis to Glutathione  
*R.R. Ratan, T.H. Murphy, and J.M. Baraban*
- 4393 Enhancement of Ca Current in the Accessory Radula Closer Muscle of *Aplysia californica* by Neuromodulators That Potentiate Its Contractions  
*V. Březina, C.G. Evans, and K.R. Weiss*
- 4412 Activation of K Current in the Accessory Radula Closer Muscle of *Aplysia californica* by Neuromodulators That Depress Its Contractions  
*V. Březina, C.G. Evans, and K.R. Weiss*
- 4433 Activation of Metabotropic Glutamate Receptors Differentially Affects Two Classes of Hippocampal Interneurons and Potentiates Excitatory Synaptic Transmission  
*C.J. McBain, T.J. DiChiara, and J.A. Kauer*
- 4446 Requirement of Polysialic Acid for the Migration of the O-2A Glial Progenitor Cell from Neurohypophyseal Explants  
*C. Wang, G. Rougon, and J.Z. Kiss*
- 4458 Conserved Spatial Learning in Cooled Rats in Spite of Slowing of Dentate Field Potentials  
*E.I. Moser and P. Andersen*
- 4467 Locus Coeruleus Neurons in Monkey Are Selectively Activated by Attended Cues in a Vigilance Task  
*G. Aston-Jones, J. Rajkowski, P. Kubiak, and T. Alexinsky*

- 4481 Distribution of Carbohydrate Epitopes among Disjoint Subsets of Leech Sensory Afferent Neurons  
*K. Zipser, M. Erhardt, J. Song, R.N. Cole, and B. Zipser*
- 4494 D<sub>1</sub> Agonist-induced Excitation of Substantia Nigra Pars Reticulata Neurons: Mediation by D<sub>1</sub> Receptors on Striatonigral Terminals via a Pertussis Toxin-Sensitive Coupling Pathway  
*L.P. Martin and B.L. Waszczak*
- 4507 Differential Effects on Spatial Navigation of Immunotoxin-induced Cholinergic Lesions of the Medial Septal Area and Nucleus Basalis Magnocellularis  
*J. Berger-Sweeney, S. Heckers, M.-M. Mesulam, R.G. Wiley, D.A. Lappi, and M. Sharma*
- 4520 Formation of Transient Inappropriate Sensorimotor Synapses in Developing Rat Spinal Cords  
*B.S. Seebach and L. Ziskind-Conhaim*
- 4529 The Appearance of NPY and VIP in Sympathetic Neuroblasts and Subsequent Alterations in Their Expression  
*S. Tyrrell and S.C. Landis*
- 4548 GABA Synapses Formed *in vitro* by Local Axon Collaterals of Nucleus Accumbens Neurons  
*W.-X. Shi and S. Rayport*
- 4561 Modulation of Glycine Affinity for NMDA Receptors by Extracellular Ca<sup>2+</sup> in Trigeminal Neurons  
*Y. Gu and L.-Y.M. Huang*

**Cover picture:** Male midshipman fish generate species-typical mate calls to attract females during the breeding season. The serial transneuronal transport of biocytin across at least three synapses has now identified the neuronal network that establishes the temporal and spectral features of these vocalizations. Shown here is a computer-enhanced photomicrograph through the paired, midline sonic motor nuclei. Motoneurons together with ventrolateral pacemaker neurons are filled bilaterally after peripheral application of biocytin to a single motor nerve. Ventral, exiting bundles of motor axons are also labeled bilaterally. See also Figure 2L of Bass et al., pp. 4025–4040.

**Erratum:** In “Regulation of Neurotrophin Receptor Expression during Embryonic and Postnatal Development” (E. Escandón, D. Soppet, A. Rosenthal, J.-L. Mendoza-Ramírez, E. Szönyi, L.E. Burton, C.E. Henderson, L.F. Parada, and K. Nikolics), which appeared on pages 2054–2068 in the April 1994 issue, the symbols defined in the legend to Figure 3 appeared out of order. The legend should read:

Self- and cross-competition analysis of BDNF (*A*) and NT-4/5 (*B*) binding to recombinant cells expressing p145<sup>TrkB</sup>. Crude membrane preparations (150 µg of total protein/tube) were incubated in the presence of 50–100 pM <sup>125</sup>I-labeled BDNF (*A*) or <sup>125</sup>I-labeled NT-4/5 (*B*) with increasing concentrations of homologous or heterologous unlabeled ligands. The symbols are as follows: ■, BDNF; ●, NT-4/5; ▼, NT-3; ▲, NGF. The binding assay conditions are described in Materials and Methods. The competitor neurotrophin concentrations (picomolar) are indicated.

The publisher regrets the error.

Persons interested in becoming members of the Society for Neuroscience should address inquiries to the Society for Neuroscience, 11 Dupont Circle, N.W., Suite 500, Washington, D.C. 20036 (202-462-6688; fax 202-234-9770).

Instructions for Authors appear at the end of the February 1994 issue. Copies of the Instructions can be obtained by writing to Diane M. Sullenberger, *The Journal of Neuroscience*, Society for Neuroscience, 11 Dupont Circle, N.W., Suite 500, Washington, D.C. 20036 (202-462-6688). Submissions should be sent to the above address. Scientific inquiries concerning manuscripts can be made directly to Dr. William D. Willis, Jr., Editor-in-Chief, *The Journal of Neuroscience*, Department of Anatomy and Neurosciences, Marine Biomedical Institute, The University of Texas Medical Branch, 200 University Boulevard, Suite 608, Galveston, TX 77555-0843 USA (409-772-4684; fax 409-772-4687; e-mail JN@MBIAN.UTMB.EDU).

*The Journal of Neuroscience* requests that authors send a disk containing an electronic file of their manuscript with each submission. Most word processing software can be used; see the Instructions for Authors for detailed guidelines on acceptable disk and file formats.