

# BRAIN ACTIVITY

ACADEMIC AND RESEARCH NEWS

VOLUME 5 NUMBER 2

## IN THIS ISSUE . . .

. . . we focus on the valuable support provided to the Department by generous private donors, federal grants, and other sources of research funding. We also announce the arrival of the CyberKnife®, a unique new radiosurgery system that lets physicians target tumors previously untreatable with traditional radiosurgical techniques.



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## UCSF RANKED FIRST IN NIH EXTRAMURAL AWARDS TO DEPARTMENTS OF NEUROLOGICAL SURGERY

The Office of Extramural Research of the National Institutes of Health (NIH) has announced that UCSF's Department of Neurological Surgery ranked first in extramural funding awarded by the NIH to neurological surgery departments throughout the United States in 2002. The Department has received 25 grants totaling over \$8.5 million in funding. The two largest grants are the Brain Tumor Research Center (BTRC) Program Project Grant, which has been renewed consistently for over 27 years, and the Specialized Program of Research Excellence (SPORE) grant awarded to BTRC investigators and their colleagues in the UCSF Comprehensive Cancer Center's Neurologic Oncology Program in 2002.

The innovative researchers with UCSF's Neurological Surgery Research Centers represent a broad range of disciplines. Long a major center for brain-tumor research, the BTRC looks forward to occupying a new site at UCSF Mission Bay by 2006. Uniting the BTRC laboratories there will create space on the Parnassus campus for expansion of the other neuroscience research programs being developed, such as those investigating neurological injury, epilepsy, movement and cerebrovascular disorders, and the potential use of neural stem cells to treat neurological diseases. Dedicated to translating basic research findings into effective therapies, the Department's researchers are not complacent with their success in funding their work. With the diligent help of the Research Administration staff, they have already submitted 50 new grant applications since January 2003.



Members of the Alvarez-Buylla laboratory, recent recipient of a half-million dollar gift for stem-cell research (p. 3, col. 1) (left to right): Minoree Kohwi, Benedicte Menn, Arturo Alvarez-Buylla, Alfredo Quiñones-Hinojosa, Rui Galvao. Absent from the photograph: Tony Tramontin, Nader Sanai, Manuel Alvarez-Dolado, Ryan Pata, Zaman Mirzadeh, and Cynthia Yaschine.



## LOOKING TO THE FUTURE

We are making great strides in our Neurological Surgery research programs and, with this newsletter, I want to thank the people who are making that possible. There are now 24 faculty members in the Department conducting basic science studies and working in dynamic research teams with our many clinical investigators to translate research findings into new or improved therapies. Our Neurological Surgery Research Centers were founded on this concept of translational research, and we have new collaborative partnerships forming every year. That our Department ranked first in extramural funding awarded by the NIH to investigators in our discipline in 2002 is a tribute to our research faculty. Biomedical research is a costly endeavor, and those dedicated investigators must consistently seek funding for their work while maintaining the discipline and imagination it takes to make innovative biomedical advancements.

But not all of our funding comes from NIH grants. Gifts from organizations, foundations, and funds support much of our work, as do gifts from private individuals. Gifts from our patients and their families and friends are of vital importance, and we are grateful to the many donors who have made contributions – some given in small amounts but consistently over many years. Critical not only to research today but also to the education of researchers to carry on our work are the gifts from people who have contributed toward building our Department's faculty. The gift that establishes a Distinguished Professorship or an Endowed Chair for a professor provides a permanent source of support that enables the university to attract and retain the most talented and productive of biomedical researchers and educators. We are grateful to the donors who make this honor possible.

The gifts and personal commitment of donors to help establish state-of-the-art research facilities provide us with the foundation that is essential to building a program of innovative research. We are deeply indebted to the people whose personal generosity makes so fundamental a contribution to the strength of our research efforts. These generous people sustain our research efforts from day to day, as do those who give their valuable time toward raising funds for our work. They have our deepest gratitude.

Mitchel S. Berger MD  
Professor and Chairman

## DISTINGUISHED PROFESSORSHIPS AND ENDOWED CHAIRS IN NEUROLOGICAL SURGERY

The gift that establishes a Distinguished Professorship or an Endowed Chair for a professor provides a permanent source of support that enables the university to attract and retain the most talented and productive of biomedical researchers and educators. We are grateful to the generous donors who make this honor possible.

### Distinguished Professorships

Berthold and Belle N. Guggenime Distinguished Professorship in Neurological Surgery

– Dennis F. Deen PhD

Kathleen M. Plant Distinguished Professorship

– *(Currently unfilled)*

### Endowed Chairs

Neil H. and Karen Brownstein Chair in Molecular Neuro-Oncology

– *(Appointment Pending Approval)*

Dennis Bruce Dettmer Endowed Chair in Pediatric Neurological Surgery

– Nalin Gupta MD, PhD

Suzanne Marie and Robert Vincent Haderle Endowed Chair in Molecular Neuro-Oncology

– Russell O. Pieper PhD

Ruth Halperin Endowed Chair in Neurological Surgery

– *(Appointment Pending Approval)*

Alvera L. Kan Endowed Chair in Neurological Surgery

– Linda J. Noble PhD

Lai Wan Kan Endowed Chair in Neurological Surgery

– Susan M. Chang MD

Tong Po Kan Endowed Chair in Neurological Surgery

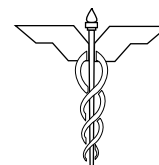
– Michael T. Lawton MD

Stephen Muss Endowed Chair in Neurological Surgery

– Arturo Alvarez-Buylla PhD

Charles B. Wilson Endowed Chair in Neurological Surgery

– Michael D. Prados MD



## NEURAL STEM CELLS AND REPAIR IN THE ADULT BRAIN



The mechanisms by which new nerve cells are formed, migrate, and integrate in the adult brain are the main research focus in the laboratory of **Arturo Alvarez-Buylla PhD**, Stephen Muss Professor of Neurological Surgery. Dr. Alvarez-Buylla's research group has made a number of pioneering observations: the first indication of radial glia as neuronal precursors; the characterization of a germinal zone in the adult

mammalian brain that generates large numbers of new neurons; the first demonstration of long-range neuronal migration; and recently the identification of adult neural stem cells.

Alvarez-Buylla's group initially identified a region in the brain of adult mammals, the subventricular zone (SVZ), which contains large numbers of neuronal precursors. They then showed that young neurons born in the SVZ migrate a long distance through the anterior forebrain to complete their differentiation and become integrated in the olfactory bulb. This migration happens constantly at a very high rate. Further work on this system led them to identify a novel form of neuronal translocation called chain migration. This migration is unique, in that young neurons move without the aid of radial-glia or axonal guides. Instead, young neurons migrate closely associated to each other, forming long aggregates (chains). The research group has shown that there is an extensive network of chains of young migrating neurons in the adult brain. Investigations into the origin of these new neurons led them to identify the stem cells in the SVZ. Surprisingly, these cells correspond to astrocytes. Based on that finding, the group has suggested a new hypothesis that links early neuroepithelial cells, radial glia, and adult SVZ astrocytes as the stem cells of the developing brain and the adult brain. Work currently underway in the laboratory is testing this hypothesis and identifying the stem cells in the adult human brain.

The presence of neural stem cells in the adult brain challenges old dogmas concerning the development of the brain and suggests completely new alternatives for cell replacement therapy. Alvarez-Buylla and his research group are now working to understand how stem cells differentiate and migrate to the appropriate location so that they might be useful for brain repair. The future challenge will be to direct

*Continued on page 4*

## INNOVATION IN CLINICAL NEURO-ONCOLOGY RESEARCH



**Susan Chang, MD**, Lai Wan Kan Associate Professor of Neurological Surgery, is the Director of the Department's Clinical Neuro-Oncology Program. Her ultimate research goal is the development of new and effective therapeutic strategies for the treatment of patients with primary brain tumors. The most direct research application of this goal is the design and conduct of phase I, II, and III clinical trials. Chang

has obtained grant funding for numerous clinical trials to address the role of combination modalities for patients with newly diagnosed glioblastoma, low-grade glioma, and recurrent malignant glioma.

Over the course of her career, Chang's research has expanded outside of standard clinical trials, and she has collaborated with expert researchers in both clinical and basic science fields. She is currently the clinical co-principal investigator on a SPORE grant project to evaluate magnetic resonance spectroscopy imaging (MRSI) parameters for potential tumor prognosis indicators. Chang also has an interest in the use of molecular cytogenetics to determine specific markers of clinical outcome in patients with glioma. She currently leads research projects in this area to identify the markers that may be important in determining outcome for patients with low-grade glioma and to explore the role of molecular cytogenetic abnormalities in predicting the response to radiation therapy in patients with glioblastoma multiforme.

Chang also has a specialty interest in the effects of treatment on the quality of life of patients who have primary brain tumors. She has participated in building a research agenda for complementary and alternative approaches to neuro-oncology, and has been involved closely with the Glioma Outcome Project, a multi-institutional prospective study looking at important outcome measures, such as effects of surgical intervention and quality of life of patients undergoing therapy for a brain tumor.

In addition to her own research, Chang serves as a consultant on grants conducted by other members of the Brain Tumor Research Center, linking results from basic science research efforts to clinical data. She is a key preceptor in training neuro-oncology fellows about conducting clinical trials and analyzing and interpreting clinical-trial data.

*Continued on page 4*

these cells to form specific types of nerve cells that can be used for cell replacement in diseases such as Parkinson's and Alzheimer's. The work also has profound implications for understanding the origin of brain tumors.

The Alvarez-Buylla lab recently received a gift of \$500,000 for stem-cell research from Frances and John Bowes, which will be matched by Campaign for UCSF National Chair Andrew S. Grove as part of the Grove Stem Cell Challenge.

#### DR. ALVAREZ-BUYLLA'S SELECTED PUBLICATIONS

Doetsch F, Petreanu L, Caille I, Garcia-Verdugo JM, **Alvarez-Buylla A**. EGF converts transit-amplifying neurogenic precursors in the adult brain into multipotent stem cells. *Neuron* 2002;36:1021-34.

Petreanu L, **Alvarez-Buylla A**. Maturation and death of adult-born olfactory bulb granule neurons: role of olfaction. *J Neurosci* 2002;22:6106-13.

Tramontin AD, Garcia-Verdugo JM, Lim DA, **Alvarez-Buylla A**. Postnatal development of radial glia and the ventricular zone (VZ): a continuum of the neural stem cell compartment. *Cereb Cortex* 2003;13:580-7.

Wichterle H, Alvarez-Dolado M, Erskine L, **Alvarez-Buylla A**. Permissive corridor and diffusible gradients direct medial ganglionic eminence cell migration to the neocortex. *Proc Natl Acad Sci USA* 2003;100:727-32.

#### DR. CHANG'S SELECTED PUBLICATIONS

**Chang S**. Clinical trials and experimental chemotherapy. In Prados MD (ed): *Brain Tumors*. Ontario, B.C. Decker, 2002, pp. 211-218.

**Chang SM**, Barker FG 2nd, Schmidt MH, Sloan AE, Kasper R, Phillips L, Shih K, Hariharan S, Berger MS. Clinical trial participation among patients enrolled in the Glioma Outcomes Project. *Cancer* 2002;94:2681-7.

**Chang S**, Kuhn J, Robins I, Schold C, Spence A, Berger M, Mehta M, Pollack I, Gilbert M, Prados M. A study of different dose-intense infusion schedules of phenylacetate in patients with recurrent primary brain tumors. *Investigational New Drugs* (in press).

**Chang S**, Parney I, McDermott M, Barker FG 2nd, Schmidt M, Huang W, Laws E, Lillehei K, Bernstein M, Brem H, Sloan A, Berger M. Perioperative complications and neurological outcome for first and second craniotomy among patients enrolled in the Glioma Outcomes Project. *J Neurosurg* 2003;98:1175-81.

## NEW FACULTY APPOINTED

We are pleased to welcome four new faculty members to the Department.



**Christopher Ames MD** has joined the Department as Assistant Professor, having previously served as founder and Principal Investigator of the University of California San Diego Salk Institute Brain Tumor Collaborative Project. His clinical surgical specialty is the treatment of spinal disorders.

His current research interests include development of resorbable spinal instrumentation with osteoinductive protein delivery function and spinal instrumentation composed of osteotransductive materials



**Eric Burton MD**, coming to UCSF from the University of California, Los Angeles Department of Neurology, has been appointed Assistant Professor in the Department. He is a clinical neuro-oncologist whose academic interest is in translational research, characterizing the molecular aberrations that

cause brain tumor formation and correlating these aberrations with the patient's outcome.



**Soonmee Cha MD** has joined the Department as Assistant Professor. As a joint appointee in the Neuroradiology Department, her research focus is on improving the neuroradiologic diagnosis of brain tumors and developing new imaging techniques that can serve as surrogate markers of tumor

biology, response to therapy, and prognosis. Her particular interests are in perfusion magnetic resonance imaging (pMRI).



**Andrew Parsa MD, PhD**, who has joined the Department as Assistant Professor, specializes in adult brain and spinal-cord tumors and is experienced in the surgical treatment of skull-base tumors, acoustic neuromas, and intraoperative mapping of brain function to optimize tumor resection.

He is also an active member of the Gamma Knife® Radiosurgery Program. Parsa has extensive research interests including the development of a brain tumor vaccine, and is the recent recipient of a Specialized Program of Research Excellence (SPORE) Developmental Research Award.

# NEW CYBERKNIFE® EXPANDS THE RADIOSURGERY PROGRAM AT UCSF

UCSF's Neurosurgery and Radiation Oncology faculty are now using the CyberKnife® (Accuray Inc., Sunnyvale, CA), a new type of stereotactic radiosurgery system. The CyberKnife's robotic arm offers surgeons a flexibility that makes it possible to treat areas of the body that are difficult or impossible to target with other radiosurgery techniques. Brain and spinal-cord lesions that can be treated with the CyberKnife but are difficult to reach with conventional, frame-based systems include meningiomas and metastases located in the low posterior fossa, the foramen magnum, and the upper cervical spine. UCSF Medical Center is one of only nine centers in the United States with an active CyberKnife system, and is the only center in northern California with both CyberKnife



*Philip Weinstein MD, Professor of Neurological Surgery, positions a patient for treatment with the department's new CyberKnife.*

and Gamma Knife® technology. The CyberKnife is the only stereotactic radiosurgery system that uses the body's skeletal structure as a reference frame. As immobilization of the patient and a head frame are not required, the system is particularly ideal for young pediatric patients whose skulls are too fragile for frame-based treatment. In addition to spinal and brain tumors, the CyberKnife can be used to treat cancers in the lung, pancreas, and prostate; cancers metastatic to the brain, lung, and spine; and other lesions, tumors, and conditions where radiation

treatment is indicated. Referring physicians can call 415-353-9887 for more information about the UCSF radiosurgery program.

## PEDIATRIC NEUROSURGERY NEWS

### NEW MULTIDISCIPLINARY PEDIATRIC SPASTICITY AND MOVEMENT DISORDERS CLINIC AT UCSF MEDICAL CENTER

Pediatric Neurological Surgery faculty are devoting substantial effort to a new multidisciplinary Pediatric Spasticity and Movement Disorders Clinic established at the UCSF Medical Center in August 2002. The directors of the clinic are **Victor Perry MD**, Assistant Professor of Neurological Surgery (Surgical Director) and **Richard Quint MD, MPH**, Assistant Professor of Pediatrics (Rehabilitation Medical Specialist and Medical Director). The program is the only one of its kind in the San Francisco Bay Area offering comprehensive diagnosis, rehabilitation, and treatments including deep-brain stimulation.

As a collaborative effort between key specialties, the program is distinguished by the integration of expertise from pediatrics, pediatric neurology, pediatric neurosurgery, pediatric orthopedics, developmental pediatrics, and pediatric rehabilitation medicine. One of the major goals of the clinic is to examine prospectively the treatment efficacy of major therapeutic interventions (for example, dorsal rhizotomy, the baclofen pump) as compared with nonsurgical

management for patients with spasticity and other movement disorders. To provide the desired level of in-depth, individualized evaluation, the UCSF Spasticity Clinic sees only four to five patients at each monthly clinic, by referral only. Referring physicians can call 415-353-7500 for more information.

### PEDIATRIC OUTREACH CLINIC OPENS IN WALNUT CREEK

A Pediatric Neurosciences Clinic has opened in Walnut Creek, California, at 1479 Ygnacio Valley Road. The new clinic is a project of the pediatric divisions of Rehabilitation, Neurology, and Neurosurgery. **Jonathan Strober MD**, a pediatric neurologist, and **Nalin Gupta MD, PhD** and **Victor Perry MD**, both pediatric neurosurgeons, staff the clinic to serve young patients in the East Bay. The clinic is one of more than 70 outreach clinics that UCSF Children's Hospital operates throughout Northern California. Pediatric specialists travel to these clinics to provide expertise in communities outside of San Francisco where, in many cases, their specialized skills are not available locally.

# NEUROSURGERY NOTES

**Scott Baraban PhD**, Assistant Professor of Neurological Surgery, has received a Klingenstein Fellowship Award in the Neurosciences from the Esther A. and Joseph Klingenstein Fund for his work toward a cellular understanding of seizure-resistance mechanisms. These annual awards were established in 1981 to support, during the early stages of their careers, young investigators engaged in basic or clinical research that may lead to a better understanding of epilepsy.

Three investigators have received grants and research awards from the National Brain Tumor Foundation (NBTF). **Krys Bankiewicz MD, PhD** received the NBTF's 2002 Richard Anthony Hollow Jr. Memorial Grant for North American Brain Tumor Consortium Institutions; and **Burt Feuerstein MD, PhD** and **William Weiss MD, PhD** received research awards from the Oligo Brain Tumor Fund of the NBTF.

**Nicholas Barbaro MD**, Professor of Neurological Surgery, has been appointed to the Editorial Board of the journal *Neurosurgery* and to the NIH/NINDS Study Section NSD-K of the National Institutes of Health and the National Institute of Neurological Disorders and Stroke, which reviews clinical trials related to neurological diseases.

**Susan Chang MD**, Associate Professor of Neurological Surgery, has been appointed to hold the Lai Wan Kan Endowed Chair in Neurological Surgery.

**Susan Eastwood ELS(D)**, director of the Department's Publications & Grant Writing Division, is the year 2003 recipient of the Harold Swanberg Distinguished Service

Award, the highest honor accorded by the American Medical Writers Association to a member for distinguished contributions to medical communications.

**Lisa Hannegan RN, MS**, Clinical Nurse Specialist with the Department, has received UCSF's Helen B. Ripple Award for Excellence in Neuroscience Nursing.

**Martin Holland MD**, Assistant Professor of Neurological Surgery and Chief of Neurosurgery at San Francisco General Hospital, has received the Teaching Award for Clinical Faculty presented by the UCSF School of Medicine Class of 2003.

**Anita Lal PhD**, who joined the Brain Tumor Research Center (BTRC) in February 2003, has been recruited to the BTRC's Meningioma Laboratory. Lal is a molecular biologist who will lead the investigation of meningiomas together with Principal Investigator **Michael McDermott MD** and co-principal investigator **Dennis Deen PhD**.

**Linda Noble PhD**, Professor and Vice Chair of Neurological Surgery, has been appointed to hold the Alvera L. Kan Endowed Chair in Neurological Surgery.

**Charles Wilson MD, DSc, MSHA**, UCSF Professor Emeritus of Neurological Surgery, received the UCSF Medal in April 2003 for contributions in his field and to UCSF as a surgeon, teacher, colleague, and mentor. The Medal is the highest award bestowed by UCSF. Wilson has also recently been appointed a Visiting Editor of the *British Medical Journal*.



**The UCSF Spine Center** will open in the fall of 2003, offering the full range of surgical and medical specialties for state-of-the-art diagnoses and treatments of complex spinal disorders resulting from deformities, degenerative conditions, fractures, and cancer. This multidisciplinary effort includes faculty specialists and other health-care professionals from Neurological Surgery, Orthopedic Surgery, Neurology, Pain Management, Physical Therapy, and Psychiatry.





**G. Edward Vates MD, PhD** received his BS degree in Zoology summa cum laude from Duke University in Durham, North Carolina. During MD-PhD training, he received his PhD in neuroethology in 1996, working with Dr. Fernando Nottebohm at The Rockefeller University, and his MD from Cornell University Medical College in 1997. After an internship at UCSF, he began his residency in Neurological Surgery at UCSF in 1998.

Throughout training, Vates has been an avid investigator. As an undergraduate, he studied the neurochemical and microanatomical organization of learning and memory in *Octopus vulgaris* at the Duke University Marine Laboratory with Drs. J. David Robertson of Duke University and J.Z. Young of University College, London. He continued to pursue the foundations of learning and memory in another species, the canary, while working with Dr. Nottebohm – studying the anatomy and physiology of the brain circuits that help to turn canaries' auditory memories into well-rehearsed songs and demonstrating many homologies between the circuits that control singing in birds and those connecting motor control centers in humans.

During his residency, Vates has been investigating new possibilities for creating animal models of arteriovenous malformations (AVMs). Among his clinical studies, he has shown that new imaging technologies like magnetoencephalography may help to better characterize which patients will benefit from open surgical removal of an AVM as compared with stereotactic radiosurgical ablation. With **Drs. Mitchel Berger and Charles Wilson**, he has published the UCSF experience with gliomatosis cerebri and pituitary abscesses, the largest such series documented.

Vates has presented clinical and research papers at conferences of the American Association of Neurological Surgeons (AANS), the Congress of Neurological Surgeons (CNS), the AANS/CNS Joint Section on Cerebrovascular Surgery, and the American Academy of Neurological Surgery. He also served as the resident member of the Residency Review Committee for Neurological Surgery of the Accreditation Council for Graduate Medical Education, the national organization authorizing residency training in neurological surgery in the United States.

In his rare free time, Vates enjoys cooking and music, building on an appreciation of music gained while studying piano and competing nationally for 18 years. He is also developing an interest in golf. After completing his residency in June 2003, he will start a fellowship in cerebrovascular and skull base surgery with Dr. Arthur Day at the Brigham and Women's Hospital, Harvard Medical School, in Boston.

## SELECTED PUBLICATIONS

**Vates GE, Berger MS, Wilson CB.** Diagnosis and management of pituitary abscess: a review of twenty-four cases. *J Neurosurg* 2001;95:233-41.

**Vates GE, Lawton MT, Wilson CB, McDermott MW, Halbach VV, Roberts TP, Rowley HA.** Magnetic source imaging demonstrates altered cortical distribution of function in patients with arteriovenous malformations. *Neurosurgery* 2002;51:614-23; discussion 623-7.

**Vates GE, Quinones-Hinojosa A, Halbach VV, Lawton MT.** Conus primedullary arteriovenous fistula with intracranial drainage: case report. *Neurosurgery* 2001;49:457-61; discussion 461-2.

**Vates GE, Wang KC, Bonovich D, Dowd CE, Lawton MT.** Bow hunter stroke caused by cervical disc herniation. Case report. *J Neurosurg* 2002;96:90-3.

## RESIDENTS' ACTIVITIES AND PUBLICATIONS

**Alfredo Quiñones-Hinojosa MD**, third-year resident in Neurological Surgery, has recently received two honors: the Teaching Award for Clinical Housestaff presented by the UCSF School of Medicine Class of 2003; and the Boldrey Award from the San Francisco Neurological Society for his presentation Correlation of Intraoperative Cortical Mapping with Magnetic Resonance Imaging Landmarks to Preoperatively Predict Localization of Broca's Area.

**Cornelia von Koch MD, PhD**, fourth-year resident in Neurological Surgery, has been awarded a postdoctoral National Research Service Award (NRSA) Fellowship from the National Institutes of Health for her work on the analysis of myelomeningocele in a sheep model. The award is for a period of 1 year.

**Binder DK, Dillon WP, Fishman RA, Schmidt MH.** Intrathecal saline infusion in the treatment of obtundation associated with spontaneous intracranial hypotension: technical case report. *Neurosurgery* 2002;51:830-6; discussion 836-7.

**Du R, Dhoot J, McDermott MW, Gupta N.** Cystic schwannoma of the anterior tentorial hiatus. Case report and review of the literature. *Pediatr Neurosurg* 2003;38:167-73.

**Quinones-Hinojosa A, Auguste K, Lawton MT.** Unusual venous drainage of an arteriovenous malformation. Case illustration. *J Neurosurg* 2003;98:642.

**Quinones-Hinojosa A, Gadkary C, Gulati M, Lyon R, von Koch C, Yingling CD.** Clinical outcome of adults after tethered cord release with intraoperative electrophysiology monitoring. *Surg Neurol* (in press).

**von Koch CS, Schmidt MH, Uyehara-Lock JH, Berger MS, Chang SM.** The role of chemotherapy in the treatment of central neurocytoma: illustration of a case and review of the literature. *Surg Neurol* (in press).

**Ware ML, Berger MS, Binder DK.** Molecular biology of glioma tumorigenesis. *Histol Histopathol* 2003;18:207-16.



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**– Selected Recent Publications from the Department of Neurological Surgery –**

Anderson RC, Elder JB, Brown MD, Mandigo CE, **Parsa AT**, Kim PD, Senatus P, Anderson DE, Bruce JN. Changes in the immunologic phenotype of human malignant glioma cells after passaging in vitro. *Clin Immunol* 2002;102:84-95.

Becker SS, Jackler RK, **Pitts LH**. CSF leak after acoustic neuroma surgery: a comparison of the translabyrinthine, middle fossa, and retrosigmoid approaches. *Otol Neurotol* 2003;24:107-12.

**Burton EC, Lamborn KR, Feuerstein BG, Prados M**, Scott J, Forsyth P, Passe S, Jenkins RB, Aldape KD. Genetic aberrations defined by comparative genomic hybridization distinguish long-term from typical survivors of glioblastoma. *Cancer Res* 2002;62:6205-10.

**Costello JF**. DNA methylation in brain development and gliomagenesis. *Front Biosci* 2003;8:S175-84.

DuBois SG, Etzell JE, Matthey KK, Robbins E, **Banerjee A**. Pediatric acute blastic natural killer cell leukemia. *Leuk Lymphoma* 2002;43:901-6.

Hirose Y, Kreklauf EL, Erickson LC, **Berger MS, Pieper RO**. Delayed depletion of O6-methylguanine-DNA methyltransferase resulting in failure to protect the human glioblastoma cell line SF767 from temozolomide-induced cytotoxicity. *J Neurosurg* 2003;98:591-8.

Kim JH, Auerbach JM, Rodriguez-Gomez JA, Velasco I, Gavin D, Lumelsky N, Lee SH, Nguyen J, Sanchez-Pernate R, **Bankiewicz K**, McKay R. Dopamine neurons derived from embryonic stem cells function in an animal model of Parkinson's disease. *Nature* 2002;418:50-6.

Knudson MM, Lee S, Erickson V, Morabito D, Derugin N, **Manley GT**. Tissue oxygen monitoring during hemorrhagic shock and resuscitation: a comparison of lactated Ringer's solution, hypertonic saline dextran, and HBOC-201. *J Trauma* 2003;54:242-52.

Kokubo Y, Matson GB, Derugin N, Hill T, Mancuso A, Chan PH, **Weinstein PR**. Transgenic mice expressing human copper-zinc superoxide dismutase exhibit attenuated apparent diffusion coefficient reduction during reperfusion following focal cerebral ischemia. *Brain Res* 2002;947:1-8.

**Larson DA, Prados M, Lamborn KR**, Smith V, Sneed PK, **Chang S, Nicholas KM (sic; MK)**, Wara WM, Devriendt D, **Kunwar S, Berger M, McDermott MW**. Phase II study of high central dose Gamma Knife radiosurgery and marimastat in patients with recurrent malignant glioma. *Int J Radiat Oncol Biol Phys* 2002;54:1397-404.

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McKnight TR, von dem Bussche MH, Vigneron DB, Lu Y, **Berger MS, McDermott MW**, Dillon WP, Graves EE, Pirzkall A, Nelson SJ. Histopathological validation of a three-dimensional magnetic resonance spectroscopy index as a predictor of tumor presence. *J Neurosurg* 2002;97:794-802.

Monje M, Mizumatsu S, **Fike JR**, Palmer TD. Irradiation induces neural precursor cell dysfunction. *Nat Med* 2002;8:955-62.

Paredes MF, **Baraban SC**. A review of gene expression patterns in the malformed brain. *Mol Neurobiol* 2002;26:109-16.

**Perry VL**, Albright AL, Adelson PD. Operative nuances of myelomeningocele closure. *Neurosurgery* 2002;51:719-23; discussion 723-4.

Tong W, Igarashi T, Ferriero D, **Noble LJ**. Traumatic brain injury in the immature mouse brain: characterization and regional vulnerability. *Exp Neurol* 2002;176:105-16.

Tsuchiya D, Hong S, Suh SW, Kayama T, **Panther SS, Weinstein PR**. Mild hypothermia reduces zinc translocation, neuronal cell death, and mortality after transient global ischemia in mice. *J Cereb Blood Flow Metab* 2002;22:1231-8.

Zhang MY, Wang X, Wang JT, **Compagnone NA**, Mellon SH, Olson JL, Tenenhouse HS, Miller WL, Portale AA. Dietary phosphorus transcriptionally regulates 25-hydroxyvitamin D-1alpha-hydroxylase gene expression in the proximal renal tubule. *Endocrinology* 2002;143:587-95.

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