

NORRIS COTTON CANCER CENTER
THE ANDREA CLARK NELSON MEDICAL RESEARCH ENDOWMENT (THE ANDY FUND)
2008-2009 STATUS REPORT

The Andy Fund provides funding essential to Norris Cotton Cancer Center's research focused on cancer of the brain, especially glioblastoma multiforme. The Andy Fund enables investigators to pursue new ideas that may lead to more effective and patient-centered care. Promising scientists can develop preliminary research data that can then be used to pursue grant opportunities from external funding organizations such as the National Institutes of Health. By developing and sharing his/her research through publication and collaborative relationships, the investigator has an impact upon the scientific community at large and contributes to the process of discovery in cancer research.

The Andy Fund is managed by the Cancer Center Administration and funding recommendations are made by the Cancer Research Committee (CRC) and submitted to the Director of Norris Cotton Cancer Center and the Dean of Dartmouth Medical School for approval. In its deliberations regarding allocation from The Andy Fund for 2008, the CRC recognized the specific purpose of The Andy Fund to support research in malignant brain tumors and chose to support the innovative research being undertaken by Dr. Risto Kauppinen.

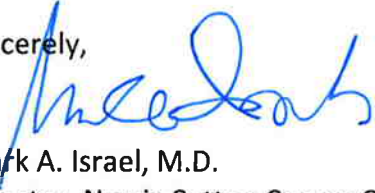
Patients with brain tumors present a special challenge in that their tumors occur within a fixed, opaque structure, and hence tumor imaging strategies take on a special significance. In recent years brain tumor imaging research has focused on efforts to not only enhance anatomic imaging which identifies the location of the tumor and its relationship to adjacent normal tissues, but also to use imaging technologies to monitor such important physiological tumor features as tumor blood flow, metabolic changes, and cellular activities. Dr. Risto Kauppinen at Dartmouth Medical School is a world-renowned brain tumor imaging researcher who has led an important research project to study such novel applications of imaging in the most common childhood brain tumor, glioma. In the work reported below, Dr. Kauppinen has used MRI and 1H-MRS to address these central variables of tumor function. In the course of this work, studies were conducted to examine tumor blood flow (hemodynamic) and glucose metabolism because new treatment strategies currently in the research pipeline focus on targeting these tumor activities.

These findings demonstrate that energy metabolism can be monitored *in vivo* in rat gliomas. This is an important finding that has led to work now ongoing in basic science laboratories at Dartmouth to understand the molecular basis of the altered glucose metabolism that characterizes these tumors. These studies provide a basis for moving into animal studies the laboratory investigations that identify the mechanisms underlying the metabolic alterations that distinguish malignant and normal tissue. The ability to monitor therapeutic interventions targeting specific molecular lesions will allow investigators to both identify biomarkers of altered metabolism and to monitor the effects of these interventions in tumors rather than in laboratory models, especially tissue culture. The model used in these studies also provides important opportunities to closely examine the interrelationship between blood flow within the tumor,

oxygenation, and energy metabolism, which is critical in understanding the pathology of these tumors.

The Andy Fund is a critical discretionary resource for Norris Cotton Cancer Center. We deeply appreciate the consideration of the donor in establishing this Fund at Dartmouth, and are committed to applying it to the most compelling brain cancer research initiatives brought forward by our scientists.

Sincerely,



Mark A. Israel, M.D.
Director, Norris Cotton Cancer Center
Professor of Pediatrics and Genetics
Dartmouth Medical School