

# THE HARTWELL FOUNDATION

## 2006 Individual Biomedical Research Award

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**University of Michigan**



### **Synchronized MRI and Drug Therapy for Pediatric Brain Tumors**

Each year, about 2,000 American children under the age of sixteen are diagnosed with a brain tumor, the most common cause of cancer-related deaths among children. Treatment usually begins with surgery, followed with radiation or chemotherapy. Surgery faces the risk of removing surrounding tissues that may provide critical brain functions; radiation and chemotherapy similarly, can harm normal tissues that are near or along the treatment path to the tumors. Under the age of three, pediatricians decline to use radiation because of critical brain development. Dr. Yang proposes an intriguing combination of innovative technologies to improve clinical outcomes in the treatment of such pediatric brain tumors. Borrowing from several disciplines, Yang offers a potential strategy to overcome the most common problem facing these malignancies: *how to get a target drug across the typically impenetrable blood-brain barrier to a specific site in the brain.* The approach integrates magnetic resonance imaging with an innovative drug delivery methodology. His unique approach utilizes comprehensive knowledge of protein biochemistry, current therapeutic modalities in the treatment of clotting disorders, and specific gene-directed anti-tumor therapy. His proposed strategy, if it proves feasible, would provide a non-surgical, repetitive, and highly specific drug therapy for the treatment of children with brain tumors.