MEDICAL REVIEW:
The Role of Hormones in Women’s Stroke Risk (p.3)
Bier and colleagues review the pathophysiology of stroke and the influence of estrogen and progestins on stroke diathesis. The authors conclude that, although risk is modified by factors such as age, co-morbidities, genetic predisposition, and concurrent use of progestins, the single-most important hormonal influence on stroke risk is increased estrogen levels. This increase can be conferred both exogenously, through the administration of hormone-replacement therapy and through use of estrogen-containing contraceptives, or endogenously, through the physiologic increases in estrogen levels during pregnancy. The authors discuss the relative risk of each of these scenarios and conclude with advice for healthcare providers regarding proper counseling about and screening for stroke risk in women.

What Is the Evidence that Riboflavin Can Be Used for Migraine Prophylaxis? (p.7)
Riboflavin is one of several herbal remedies thought to be effective in migraine prophylaxis. In this review, Liebman and colleagues look at evidence for use of riboflavin in migraine, as published in literature to date. They conclude that while some studies suggest that riboflavin is effective in adults, no studies demonstrate utility of riboflavin in migraine prophylaxis in children.

From Visual Plasticity to the Bionic Eye (p.10)
Although visual plasticity was thought to be limited to childhood, Buss discusses evidence for continued visual plasticity through adulthood, as based on current literature as well as anecdotal evidence from Project Prakash, an organization devoted to the treatment of the congenitally blind in India. The author proceeds to discuss the experimental use of retinal electrode array implants, as well as tools for promoting visual plasticity such as use of moving stimuli, enriched environments and the SSRI, fluoxetine.

SCIENTIFIC REVIEW:
Development of Preclinical Biomarkers Predictive of Safety of Vaginal Microbicides for the Prevention of HIV (p.13)
Compromise to the vaginal mucosa as a barrier to HIV infection leads to disease transmission. In this article, Mhatre presents a review of recent clinical trials involving the contraceptive N-9 and several candidate microbicides, and underscores their failures. In addition, the effects of cervicovaginal fluid and semen on the efficacy of several antimicrobials and their role in facilitating HIV infection are discussed. The author concludes with a description of an original, dual-chamber in vitro model of the vaginal mucosa used to study the direct effects of seminal fluid and microbicides on the integrity of the epithelial barrier and its susceptibility to HIV.

COMMENTARY:
How Kinetic Isotope Effects Can Be Used to Understand Enzymatic Transition States (p.18)
Understanding the kinetics of enzymatic transition states is critical to the development of enzymatic inhibitors. In this article, Schneider demonstrates how kinetic isotope effects can be used to calculate enzyme transition states. The discussion illustrates how these values can then be used to design chemically stable enzyme inhibitors.

The Second-Class Disease: Pediatric Cancer (p.20)
In this article, Hanna and colleagues discuss the challenges to diagnosis, treatment and, most importantly, funding of pediatric cancer research through the lens of “Tommy,” a 6-year-old boy diagnosed with stage IV Hodgkin’s lymphoma. An argument is made for increased National Cancer Institute funding for research in pediatric cancer, and important areas of potential research are highlighted, including cellular pathways leading to aberrant proliferation, ways of limiting the toxicity of current treatment modalities, and the introduction of novel chemotherapeutic compounds.

HISTORICAL PERSPECTIVE
From Sacrilege to Privilege: The Tale of Body Procurement for Anatomical Dissection in the United States (p.23)
In this historical piece by Hulkower, the legal issues pertaining to body procurement as well as societal perspectives on the practice of donation and anatomical dissection are examined. An emphasis on the way these issues have evolved over the past several centuries allows for a better appreciation of cadaver use for anatomical dissection today.

CASE REPORT
Case Report: Pulmonary Embolus Secondary to Diabetic Ketoacidosis Treated Successfully with Tissue Plasminogen Activator (p.27)
This case report by Wiesen and colleagues describes the rare finding of venous thromboembolism in the setting of diabetic ketoacidosis, in the absence of other risk factors. Furthermore, it demonstrates the efficacy of tissue plasminogen activator in the treatment of consequent pulmonary embolism.
**In This Issue...**

**ORIGINAL ARTICLE:**
Medical Student Views of Health-Care Reform in the United States, 2009 (p.28)
In this examination of medical students’ views on healthcare, Benson and colleagues discuss a survey of first- and second-year Einstein students’ opinions on healthcare and the extent to which these opinions are influenced by medical school education. Survey results are compared with those opinions expressed by the American Medical Association, American Medical Students Association, and Physicians for a National Health Plan. The authors conclude that Einstein medical students feel that there is a need for increased formal education regarding the healthcare system, and that the majority of students are in support of universal health care, with a multipayer system of government and insurance company collaboration.

Cognition without a Neural Code: How a Folded Cortex Might Think by Harmonizing Its Own Electromagnetic Fields (p.34)
This is a creative and novel approach to explaining the forever elusive concept of a neural code. Erlich begins by rejecting the concept of synaptic connectivity and the theory of neuronal group selection. He then introduces a four-part model comprised by three-dimensional neural circuits, the secretory rosette, biologically effective electromagnetic fields, and vector-gated ion channels. Drawing from Darwin’s theory of natural selection, an argument is made for a model in which electromagnetic fields generated within the brain interact to encrypt the neural code.