Preface

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The immature brain is vulnerable to prenatal and postnatal stresses, which may produce brain damage leading to neurological dysfunction in survivors. This special issue of *Developmental Neuroscience* presents new insights into the detection, pathophysiology and treatment of developmental brain injuries.

This volume represents the proceedings of the Fifth Hershey Conference on Developmental Brain Injury, which was held at the Doral Forrestal Conference Center and Spa, Princeton, N.J., May 31st to June 3rd 2006. Drs. Susan Vannucci, Donna Ferriero, Henrik Hagberg and Steven Levison organized the 2006 conference following four previously successful conferences. As in previous years, this conference was an international meeting (with approximately 104 participants) that was highly interactive. Twenty-five participants from 9 countries, including the USA, presented plenary talks, with 51 additional poster presentations. To date, this was the best attended of the Hershey Conferences. The conference brought together clinicians, basic scientists, fellows and graduate students in a relaxed setting to share their discoveries and thoughts with the goal of understanding the mechanisms that lead to perinatal brain injury, mechanisms of plasticity and repair, and progress in identifying new treatments and interventions. The conference was funded largely by the National Institute of Neurological Disorders and Stroke (1R13 NS 43136) with an additional contribution from the National Institute of Child Health and Human Development, Office of Rare Diseases, Morgan Stanley Children's Hospital of New York and Olympic Corporation.

At the end of the conference, there was uniform agreement that this had been yet another extremely exciting and enlightening meeting, and it was unanimously decided to schedule a Sixth Conference on Developmental Brain Injury for the spring of June 2008 to be held outside of Paris, France. Drs. Susan Vannucci, Donna Ferriero, Pierre Gressens, Henrik Hagberg, and Steven Levison offered to organize the next meeting.

A general call for articles for this special issue was announced at the 2006 conference, which resulted in many submissions. After rigorous peer review, 11 articles were selected for publication in this special issue. Several papers in this issue report preclinical tests of new therapies that prevent injury to the developing brain including erythropoietin, insulin-like growth factor-1 peptides, and antioxidants. New insights into potential use of neural stem cells to promote repair are also reported. Information obtained from MRI on human infants, combined with data from several animal models, highlights the effects of interaction of cerebral hypoxia-ischemia, excitotoxicity, oxidative stress, seizures, and inflammation on the outcome of developmental brain injury and ultimate neurological outcome. This special issue will be of interest to both clinicians and basic scientists, who are interested in the developing nervous system, its vulnerability to various pathophysiological processes, and the eventual consequences for neurological development. We hope the reader will find these articles both as stimulating and exciting as we have as editors.