Preface

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Tremendous progress in recognizing the processes that determine normal organization and function of the central nervous system has been achieved. Much of this progress reflects the enormous impact of molecular biology and genetics on developmental neuroscience research. For example, identification of genes regulating steps in the neuronal migration pathway and inactivation of these genes in mice have provided a more complete understanding of how neurons arrive at their final cortical destinations. Application of these same technologies to hippocampal development provides the basis for many of the articles that appear in this volume. Given the longstanding interest in neocortical development and organization, why is this issue devoted to the hippocampus? One of the 'oldest' regions of the brain, the hippocampal formation, plays a critical role in navigation and memory under normal conditions. In pathologies such as Alzheimer's disease and epilepsy, the hippocampus represents one of the first brain regions to suffer damage. When the question of whether the brain can generate new neurons has recently been revisited, the hippocampus was identified as one of two regions with active neurogenesis. Not surprisingly, when hippocampal develop-

ment is abnormal, pathological conditions featuring cognitive dysfunction and seizures are common (particularly in childhood).

This Special Issue does not draw from recent symposium proceedings. Rather, we asked the authors to provide original articles on specific research areas that seem critical to an understanding of hippocampal development including work describing developmental pathology and the ongoing role of developing signaling systems in adults. Authors draw on new data from their own laboratories and also summarize relevant findings in brief reviews. Broadly, the topics we covered include (a) processes involved in the development of a normal (or abnormal) hippocampus, (b) pathological implications associated with the normal or abnormal development of the hippocampus and (c) neurogenesis in an immature (or adult) hippocampus. While the views and data presented in this volume address these issues, the reader should be aware this is an emerging field with many unanswered questions. It is hoped that these articles provide both a starting point and an inspiration for future studies in this field.