Preface

HLA in Transplantation and Beyond

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Editors

The HLA system consists of a very polymorphic set of genes, which are instrumental in orchestrating antigen-specific immune responses. This issue of *Clinics in Laboratory Medicine* is devoted to provide an overview of the importance of HLA in clinical diagnostics. The articles contributed by experts in the field focus on relevant areas ranging from transplantation testing to recent developments in HLA and disease associations. At the time of writing this preface, the total number of assigned HLA class I and class II alleles is over 20,000. This number is expected to grow rapidly due to recent advancements in HLA typing technologies and by adopting next-generation sequencing (NGS) in clinical HLA typing. Due to the significant impact of new technologies in the field, a review of the issue by Profaizer and Kumánovics discusses the opportunities and challenges of NGS-based HLA-typing platforms, which have revolutionized the field of HLA testing. Focusing on the role of HLA testing in transplantation, a technology-based article by Jaramillo, Ramon, and Stoll provides an overview of cross-matching in solid organ transplantation, followed by a review by Cusick and Jindra, discussing the opportunities and challenges of HLA epitope matching and its clinical applicability in donor selection for kidney transplantation.

The next two reviews of the special issue focus on recent advancements in monitoring the health and longevity of the transplanted organ. The Schinstock and Gandhi article discusses traditional serologic and histologic posttransplant monitoring approaches, followed by an article by Barner and colleagues describing a recently developed microarray-based molecular diagnostic test for renal transplant monitoring.

Consistent with its instrumental role in immune mechanisms, HLA has been recognized as an important genetic locus for disease susceptibility and drug hypersensitivity reactions. Several reviews are focused on this important topic; one of them by Raja discusses the interplay between HLA molecules and killer cell immunoglobulin-like receptors, followed by an article by Lázár-Molnár and Snyder about the role of HLA in

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clinical diagnostic workup of celiac disease. A review by Ostrov discusses the significance of HLA testing in predicting drug hypersensitivity reactions. Finally, a review of the special issue by Shieh, Chitnis, and Monos addresses a broader perspective of HLA disease association in the context of developing technologies, which allow for the opportunity of dissecting interactions of HLA with other genomic regions, therefore proposing additional and possibly still unknown roles for HLA in health and disease.

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