

Preface

For decades, studies of the mechanism of somatic hypermutation and class switch recombination had been the focus of only a small group of B cell immunologists world-wide. In the fall of 2000, Prof. Honjo and his coworkers at Kyoto University, Japan, and Dr. Anne Durandy and her colleagues at the Hôpital Necker-Enfants Malades in Paris, France, reported their break-through discovery that the enzyme, activation induced cytidine deaminase (AID), is an essential component of the molecular machinery performing both processes. Since then, the number of scientists around the world working on this intriguing protein and the processes it catalyzes has increased dramatically. Thus, in the fall of 2008, a first mini-symposium that was solely focused on AID was held in Chapel Hill, North Carolina, USA. It sparked a dynamic environment where the most pressing questions in the field were discussed in depth. Over 40 speakers from the laboratories at the forefront of AID research presented their latest exciting findings, and the overwhelmingly positive response to the meeting prompted us to assemble this monograph focused on the findings presented. The nine chapters are co-authored by junior up-and-coming researchers and eminent senior scientists in the field, and provide the reader with a consensus comprehensive overview of our current knowledge about AID itself, the processes it catalyzes, and the burning questions these scientists are trying to address in the future.

Beyond the well characterized role of AID in human hyper IgM syndrome, deregulation of AID has recently been linked to autoimmune disease. AID has also emerged as a major player in the development of B cell lymphomas, as well as a number of other cancers, where it has been correlated both with progression toward malignancy and with relapse. Finally, active DNA demethylation by AID is emerging as

a likely non-immune function, with implications both for normal development and tumorigenesis. These recent developments have resulted in a further expansion in the ranks of scientists who are interested in this enzyme. We hope that this monograph will not only serve as a reference point to immunologists, but also to a larger cohort of scientists and physicians including those interested in cancer and stem cell biology.

Sebastian D. Fugmann
Marilyn Diaz
F. Nina Papavasiliou
(Editors)