

Blood Cell Biochemistry

Volume 4

**Basophil and Mast Cell
Degranulation and Recovery**

Blood Cell Biochemistry

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Volume 4 Basophil and Mast Cell Degranulation and Recovery

Ann M. Dvorak

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Volume 4

Basophil and Mast Cell Degranulation and Recovery

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Preface

Basophils and mast cells are similar but unique secretory cells with a well-documented role in immediate-hypersensitivity reactions. The presence of these cells in various cell-mediated hypersensitivity reactions, in tissues of multiple diseases, and as a component of the host reaction to injury and repair in numerous circumstances is well known. Release of stored and newly generated mediators of inflammation from basophils and mast cells contributes to the cascade of pathogenetic events in circumstances under which these release reactions occur. Despite insights acquired through studies of these pathologic events, the role of basophils and mast cells and their secretory products in health is not known. In this book, I review much of the structural information regarding basophils and mast cells of multiple species. Ultrastructural studies of rat mast cells historically precede and quantitatively exceed similar studies of basophils and mast cells of other species. Therefore, I first review these background studies as an entity. Then I discuss the contents of two prominent organelles—granules and lipid bodies—in basophils and mast cells of several species. The ultrastructural morphology of basophils and mast cells in three species is presented in detail to establish appropriate guidelines for their recognition and to provide general rules for analysis which are appropriate for the identification of these cells in other species as well. Discussion of secretory mechanisms for mediator release from basophils and mast cells concentrates on ultrastructural studies of these cells in several species with which we are most familiar. Similarly, I review the recovery potential, as imaged in ultrastructural studies, of guinea pig basophils and human mast cells following stimulation of anaphylactic degranulation in short-term cultures. Presentation of these structural studies as a unit will provide necessary background information for future functional studies designed to elucidate the role of basophils and mast cells in health as well as in disease.

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Ann M. Dvorak

Boston, Massachusetts

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