

# A rise from obscurity — proteoglycans in focus

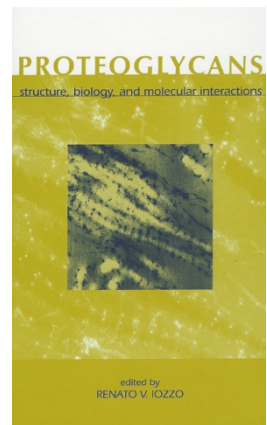
## Proteoglycans: Structure, Biology and Molecular Interactions

edited by Renato Iozzo

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Historically, proteoglycans have been viewed as a rather obscure family of complex glycoproteins that perform mainly passive structural roles in the extracellular matrix. Indeed, as pointed out in the preface by the editor, Renato Iozzo, there was a time not too long ago when including the word proteoglycan in your seminar title was guaranteed to reduce the size of your audience! The scene has now changed markedly, particularly over the past decade, with the growing evidence that proteoglycans have very active roles in many aspects of cellular regulation. I imagine that, like myself, many in the field would identify with Iozzo's comments on stumbling into this area of biology by accident. Most would probably also admit to being captivated by these fascinating molecules. Certainly, the realization that proteoglycans have so many vital biological roles has meant that in recent years many researchers from other fields have been keen to learn more about these molecules. Proof of this heightened interest is perhaps best seen in the increasing number of papers on proteoglycans appearing in high impact journals.

In view of the above comments, this book is a timely update on the state of play in the rapidly advancing field of proteoglycan biology. It provides the background knowledge required to understand the field and will appeal to those looking for an entry to this complex area. Iozzo writes that one of his goals was to "encompass the most recent advances in proteoglycan research centering on specific gene products or families of proteoglycan-encoding genes". This has been a chief focus of the field in the past decade, and in this respect the book is largely successful. It is written by an impressive array of leading researchers and encompasses a collection of detailed reviews by groups with specialist interests and expertise. Inevitably this limits the breadth of coverage and does not allow a thorough review of every aspect of proteoglycan biology (which would be a tall order in any case!). Instead, it gives a thorough overview that

provides a good flavour of recent advances across the field. Some proteoglycans are given individual attention, whereas others are covered in the context of their family groups or are grouped within specific biological contexts. Although this is not a format that is easy to follow, it does serve the useful purpose of emphasizing the wide functional versatility of proteoglycans and also justifies the evident overlap between some chapters. The work is well presented and usefully indexed, and is supported by good illustrations that enhance the clarity of the messages being conveyed. A very useful aspect is that most of the chapters specifically cover future perspectives, giving indications of new approaches and directions.

The core of the book is the chapters covering the cell-surface heparan-sulphate proteoglycans (the syndecan and glypican families), the serglycin family and the many extracellular proteoglycans. Other chapters provide coverage of the catabolism of proteoglycans, and the roles of proteoglycans in functional contexts such as the nervous system and the cornea. Two topics touched on briefly are the biosynthesis and functional aspects of glycosaminoglycan chains—more coverage on these would have been very timely. Nevertheless, these chapters serve as a useful lead into these rapidly growing areas, which are arguably outside the central remit of this volume and deserve separate treatment. There is also a chapter dedicated to hyaluronan—a glycosaminoglycan that has 'honorary' status in the proteoglycan field despite its lack of attachment to core proteins, which is the normal qualifying criterion. This chapter provides detailed coverage on the structural properties and various functional roles of this remarkable biopolymer.

This book is an excellent introduction to proteoglycans that newcomers will find particularly useful. But experienced researchers will also find this volume a good up-to-date reference on topics outside their own sphere, and an invaluable intro-

ductory text for new lab members. Hopefully, it will also succeed in the desire expressed by Iozzo that it will attract new investigators to what is a rapidly expanding field. In research it has been said that the horizon recedes as we advance. All researchers are probably familiar with this uncomfortable feeling, and those in the proteoglycan field are no exception. The exciting advances occurring in our understanding of the biochemistry, cell biology and genetics of proteoglycans at the present time bode well for the future. Those who choose to study these challenging molecules will certainly not be disappointed as our picture of them comes increasingly into focus. □

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