
Preface

I am very pleased to present the second edition of *Bioconjugation Protocols: Strategies and Methods*, part of the excellent *Methods in Molecular Biology*TM book series. This current volume builds on the outstanding first edition originally conceived and developed by Prof. Christof M. Niemeyer at Technische Universität Dortmund (Germany). The first edition of this book aimed to address the deficiencies of many of the conventional approaches to the synthesis of chemically modified biomolecular conjugates that lack efficient means to control the stoichiometry of conjugation, as well as the specific site of attachment of the conjugated moiety. In keeping with that aim, this updated and expanded second edition of *Bioconjugation Protocols* further explores newer approaches that overcome the limitations of classical synthetic methods. In addition, a number of protocols collected in this new volume clearly reflect how insightful techniques and innovative approaches in bioconjugate chemistry can be derived from the seamless interplay between the fields of organic synthesis, surface biotechnology, nanobioscience, and materials science and engineering. It is thus my sincere hope that this revised edition of *Bioconjugation Protocols* continues to serve as a highly useful and practical reference for scientists of all disciplines confronting the challenges of semisynthesizing novel types of biomolecular reagents and/or biofunctionalizing surfaces and structures of unique interest for a variety of applications ranging from biomedical diagnostics to therapeutics and to biomaterials.

The book is divided into five main parts, with Chaps. 1–24 in Parts I, II, and III describing the most recent, leading-edge approaches developed by researchers to prepare semisynthetic conjugates of native/modified biomacromolecules (proteins, nucleic acids, lipids, and carbohydrates). In Part IV, Chaps. 25–31 present methods for the preparation of biofunctionalized inorganic surfaces and polymer thin-film structures. And finally, Chaps. 32–36 in the last part of this book (Part V) specifically focus on procedures for the biofunctionalization of various types of metallic/semiconductor nanoparticles and other nanostructures (magnetic nanoparticles, quantum dots, carbon nanotubes, and silicon nanowire devices).

I am most grateful to our distinguished group of international scholars who have generously and enthusiastically contributed their valuable time, tireless efforts, and expertise to make this reference volume truly unique and relevant. I would also like to express my thanks to Prof. John Walker, the *Methods in Molecular Biology*TM Series Editor at Springer Publishing, for his excellent editorial guidance during all stages of this book project. And finally, I sincerely thank my dear family and friends for their boundless patience and understanding and for kindly providing me with their support and encouragement during the production of this work.

Menlo Park, CA

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