
Preface

Protocols for Solid-Phase Peptide Synthesis

Peptides are used ubiquitously for studies in biology, biochemistry, chemical biology, peptide-based medicinal chemistry, and indeed many other areas of research. There is a solid number of marketed peptide drugs, and the prospects for the development of new peptide drugs are very encouraging. Most of these peptides are prepared by chemical synthesis, where solid-phase peptide synthesis is the predominant method for preparation of peptides on a laboratory scale and increasingly also on an industrial scale.

Practical methodologies for peptide synthesis are the focus of this book. Thus not all reported methods could be described in length. The aim of this book is to provide laboratory protocols for both the specialist and the nonspecialist. The basic protocols provided here for solid-phase peptide synthesis are intended as a practical introduction to peptide synthesis, while the chapters on posttranslational and other modifications hopefully will also appeal to experienced peptide chemists.

The first chapter provides an introduction to the basic concepts in peptide synthesis and provides a starting (reference) point for the nonspecialist. The subsequent chapters provide protocols based on experience from the contributors' laboratories. It commences with basic protocols for the synthesis of linear, unmodified peptides. The following chapters describe protocols for the synthesis of C-terminally modified peptides, particularly peptide thioesters and aldehydes. This is combined with methods for native chemical ligation and expressed protein ligation. Next, chapters on cyclic peptides and posttranslationally modified peptides describe their synthesis, including in phospho-, glyco-, and lipopeptides. Methods for the assembly of peptidomimetic peptoids are described. Technology is also an important aspect of this book, hence an overview of instruments is provided, which is followed by methods for the relatively new area of microwave heating in peptide synthesis. Finally, the assembly of peptide and glycopeptide microarrays is included in the chapters on glycopeptide synthesis.

We have aimed at presenting a broad range of synthetic methods and different approaches to the synthesis of peptides. To achieve this we asked peptide scientists from around the world to contribute protocols based on the chemistries they use in their own laboratories. We thank all the authors for contributing excellent chapters to this book.

*Frederiksberg, Denmark
Zealand Pharma, Glostrup, Denmark
Gubra, Hørsholm, Denmark*

*Knud J. Jensen
Pernille Tofteng Shelton
Søren L. Pedersen*

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Jensen, K.J.; Tofteng Shelton, P.; Pedersen, S.L. (Eds.)

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