
Preface

This is the second edition of the *Signal Transduction Immunohistochemistry* that we decided to put together after the success of the first edition, which received extremely positive feedback from researchers worldwide. During the years following the publication of the first edition, immunohistochemistry (IHC) has not only remained one of the most valuable research and diagnostic tools in biomedical field; it has gained additional popularity among researchers from different disciplines. Despite the availability of novel detecting reagents and sophisticated imaging techniques, the detection of transiently expressed tissue targets remains a challenging task not only to novices but also to seasoned and experienced researchers. Catching the appearance of the elusive, short-lived molecules involved in signal transduction requires the use of specific techniques and protocols. As with the first edition, this volume represents a collection of detailed protocols written by experts in their fields addressing the challenges of signal transduction IHC. In addition to chapters outlining “how-to” methods, we have also included chapters reviewing the nature of signal transduction phenomena and approaches to making phospho-specific antibodies in order to help orient researchers who are new to this field. Review chapters are followed by chapters of bona fide methods covering digital imaging techniques, preservation of tissue targets, multicolor detection, flow cytometry (recognized as a close sibling of IHC), lipophagy analysis, apoptosis, stem cells, novel high-sensitivity detection, IHC controls, lysosomal cell death, multiplex IHC of tumors, and the combination of IHC with in situ hybridization. The ultimate goal of compiling this volume was to offer a guide to both novices and experts in other fields of biomedical research who need expert advice on IHC protocols to study signal transduction. We think that our second edition can be used as a troubleshooting guide for researchers in academia, government labs, and the biotech industry.

The publication of this book would not have been possible without the commitment of its contributing authors, many of whom had to sacrifice personal time to write their chapters.

I wish to thank Bio-Techne, Inc., where I run the IHC lab, for their extraordinary support and for giving me the opportunity to experiment with a variety of IHC techniques to streamline the validation of thousands of antibodies for IHC applications.

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