

**Signal transduction immunohistochemistry
Methods and protocols**

Alexander E. Kalyuzhny (ed), 2011
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Alexander E. Kalyuzhny statement that *immunohistochemical detection of labile, low abundance and short-lived signal transduction molecules appears to be a very challenging task* actually captures the same reader's feeling. Each of us daily using immunohistochemical protocols to reveal targets either useful for research or diagnostic aims will surely wonder by which tricky techniques it is possible to overcome the preservation and unmasking of those labile antigens involved in signal transduction.

Well, by seventeen chapters grouped in five parts Prof. Alexander E. Kalyuzhny is presenting an invaluable technical and methodological source of hints to satisfy our needs: to overcome troubleshootings if we are already in the field or to orientate those entering the field. The first part has a clear (necessary) introductory nature stressing the *selection and validation of antibodies for signal transduction immunohistochemistry*. The two chapters that make part II are devoted to the preservation and unmasking of tissue antigens telling us how to stabilize specific states of signal transduction proteins and, particularly noteworthy, how to make use of formalin-fixed, paraffin embedded, tissues to retrieve antigens for

immunohistochemical staining. Considering both that formalin is the most commonly used fixative for light microscopy and actually the existence of huge bio-banks (in practically any hospital or biomedical institute; these are made up by the autoptic sampling during clinical interventions, for example) of paraffin embedded samples, it becomes clear the relevance of such a protocol highlighting both the heat and the enzymatic digestion of deparaffinized tissue sections actually used protocols and presenting a novel (heat based) tricky step by step procedure both to reverse the effect of formalin fixation and for a satisfactory well antigen-retrieval. This last fact will open a vast amount of opportunity for research designs using the stored paraffin embedded – formalin fixed samples.

Several examples of signal transduction immunohistochemistry related to neurosciences, cancer and stem cells researches are presented in part IV, while in part V are detailed some novel assays and techniques like the intriguing and fascinating *double in situ detection of sonic hedgehog mRNA and pMAPK protein in examining the cell proliferation signalling pathway in mouse embryo*. Part III, that it is devoted to the imaging techniques and the high-throughput data analysis (to report the chapter illustrating how to extract cell-cycle-related expression dynamics from static data) can be better profitably read and studied as the final part.

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