

Procedures for *In Situ* Hybridization to Chromosomes, Cells, and Tissue Sections

This chapter includes contributions from several leading scientists, from researchers in molecular biology to clinical pathologists, who practice *in situ* hybridization. Protocols are given for *in situ* hybridizations on widely varying substrates, *e.g.*, chromosome spreads, chromosomes in suspension, single cells, paraffin-embedded tissue sections, ultrathin tissue sections, and whole mount preparations. Hybridization methods are described for both DNA and RNA targets.

Applications covered include gene mapping, gene expression, developmental biology, tumor biology, cell sorting, clinical cytogenetics, and analysis of infectious diseases.

These procedures use digoxigenin, biotin, and fluorochromes for labeling DNA, RNA and oligonucleotides. Labeling techniques include the classical methods, such as random primed DNA labeling, nick translation, and oligonucleotide tailing with terminal transferase, as well as PCR.

Please note that the protocols have been optimized by members of the individual laboratories and can be varied if necessary.