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# Introduction

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*L*ike the first volume of *Lab Ref*, *Lab Ref* Volume 2 is organized to allow easy access to the formulae for commonly used laboratory reagents and to facilitate robust laboratory access to information in “the Internet age.” In this edition, we have included specialized reagents for protocols not contained in *Lab Ref* such as quantitative nucleic acid analysis, RNA silencing, and imaging.

This book is designed to be used as a handy benchtop source of recipes for reagents needed for protocols described in Cold Spring Harbor Laboratory Press manuals. It is not the intention of the editors to include any buffers or recipes from the first volume of *Lab Ref*. Each recipe is cross-referenced to the manual of origin. Please refer to the Lab Manuals Key listed on the facing page. Reagents, information, and recipes are organized by usage with a focus that begins with quantitative nucleic analysis and ends with more specialized species-specific reagents. Within each category, the reagents are categorized. Also included is a selection of commonly used background information with reference tables and charts.

Due to space constraints, we have not included every recipe from each manual but have instead selected those that are most commonly used (and borrowed by others) by laboratories using techniques covered in these sections.

Here is a brief description of the material and its organization.

## **Section I**

This section comprises recipes for reagents and stock solutions used in quantitative nucleic acid analysis. Areas covered include purification and preparation of material as well as reagents used in analysis. The recipes are useful for analysis of nucleic acid isolated from bacterial, plant, or mammalian tissues. Recently, the explosion in array-based technologies has revolutionized much of molecular biology, thus this section’s particular focus is on preparation of

material for array analysis. There is less emphasis on quantitative PCR analysis because many commonly used commercial reagents (e.g., SYBR Green I, ABI) are often preferred.

## Section 2

RNAi is a relatively new field in molecular biology having emerged in the last few years. This section covers the reagents used in the preparation of dsRNA for gene-specific silencing. Since then, small regulatory RNAs have been identified as a normal part of regulating cell biology with specific regulatory enzymes. The section details specialized reagents used in the preparation of dsRNA for gene silencing activity in *C. elegans*, *D. melanogaster*, and *Arabidopsis*, as well as in mammalian tissues and embryos. Also included are buffers used in the isolation, preparation, and preliminary analysis of these small regulatory RNAs.

## Section 3

Techniques in imaging have advanced significantly in the last few years with the notable widespread use of green fluorescent protein (GFP). Other fluorescent labels are now also in use. This section provides recipes suitable for the fixation and preparation of tissues before imaging as well as reagents for staining tissues for examination of cells and intracellular structures such as the cytoskeleton.

## Section 4

This section contains reagents used in examination of proteins and protein–protein interactions. Included are quantitative methods, purification, and antibody studies not included in the first volume of *Lab Ref.*

## Section 5

This section contains buffers and reagents used in plant studies (specifically, *Arabidopsis*) not covered in previous sections. Areas include culturing conditions, preparation of tissues for histochemistry, and isolation of nucleic acid.

## Section 6

Recipes covering buffers and reagents used in studies on the mouse will be found in this section. Areas covered include in vitro culturing of embryonic stem cells and preparation of tissues for cryostorage.

## Section 7

This section provides directions for the optimal long- and short-term storage of DNA as well as bacterial, mammalian, and yeast cells.

## Section 8

The final section of the book contains formulae, conversion tables, information tables, nomenclature guidelines, useful World Wide Web sites, and background information. It is designed to be used as a reference section for commonly needed facts.