Preface

Sixteen years have elapsed since the publication of the last edition of *Methods in Immunohematology*. Much has changed since then, especially the manner in which standard operating procedures (SOPs) are written. This third edition, now called *Judd’s Methods in Immunohematology*, substantially conforms to the guidelines for SOP development promulgated by the Clinical and Laboratory Standards Institute. This adaptation required complete reformatting of the previous text and would not have been accomplished without the dedication and diligence of my coauthors, Jill Storry and Susan Johnson, and I thank them.

This new edition contains 143 procedures and 12 process documents, along with flow diagrams to guide the user in the appropriate management of patients and samples. The entire text is also available electronically to permit incorporation into institutional SOPs. All of the procedures from the second edition have been retained, despite the fact that many are no longer performed because of safety concerns (eg, elution techniques using organic solvents). By retaining procedures that may be considered obsolete by most clinical laboratory personnel, we hope to ensure they will not be lost to posterity; indeed they may be useful to research investigators.

This third edition would not have been possible without the goodwill of Peter Issitt, PhD, FIBMS, FIBiol, of Montgomery Scientific Publications for releasing the copyright to AABB, and the interest of Laurie Munk, AABB Publications Director, in acquiring said copyright. The authors thank Judy Fueger, MT(ASCP)SBB, Lead Technologist of the Immunohematology Reference Laboratory at the BloodCenter of Wisconsin, for her expertise and guidance on information mapping. Some procedures have been adapted with permission from BloodCenter of Wisconsin Quality System Documents. Finally, my coauthors and I are indebted to Jay Pennington of the AABB Publications Department for his patience, guidance, and sheer hard work in managing the publication of this book. He has been a pleasure to work with.

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September 2008
Editorial Comments

Every effort has been made to ensure the accuracy of information presented in this book. However, neither the authors nor AABB Press can accept responsibility for errors that may result from use of the included procedures. It is the responsibility of each laboratory using this book to validate each procedure, using known samples, at the first use of each method. Once it is established that the method produces the expected results, appropriate controls should be incorporated at each subsequent use.

The references cited in this text are those used as the basis for a given procedure, as noted. They may not always be the original reference to a method, and the method given may vary from the referenced procedure.

For the purposes of this book, no distinction is made between the terms red cells and Red Blood Cells (or RBCs, the proper component name for red cells concentrated by the removal of most of the plasma from sedimented or centrifuged whole blood). RBCs is used throughout to stand for both in the interest of abbreviating these often recurrent terms.

Where a specific time or temperature is mentioned, or where a specific concentration of an RBC suspension is mentioned, some variance from the stated figure is acceptable and, from a practical standpoint, necessary. Acceptable variances are given below by topic.

Temperature

- 4 C: 2 C to 8 C.
- Room temperature (RT): 20 C to 25 C.
- All other temperatures: ±1 C.

Incubation Times

In many instances, incubation times are somewhat arbitrary. When a procedure requires use of specific incubation times (eg, enzyme treatment of RBCs), every effort should be made to adhere to that incubation time. In other instances, the following serve as guidelines for acceptable deviations from the stipulated times:

- <10 minutes: ±1 minute.
- ≥10 minutes to 20 minutes: ±2 minutes.
- ≥20 minutes to 60 minutes: ±5 minutes.
- >60 minutes: ±10 minutes.
Cell Suspensions

Every effort has been made to give a range for RBC suspensions used in serologic tests; a variance of ±1% from the stated range is acceptable. For packed RBCs, the hematocrit should be 90%. The following volumes of saline or PBS added to 0.1 mL packed RBCs provide percent suspensions for serologic testing:

- 10 mL = 1%.
- 5 mL = 2%.
- 3.3 mL = 3%.
- 2.5 mL = 4%.
- 2 mL = 5%.

Centrifugation Times and Force

Because not all laboratories use the same equipment, specific times for centrifugation and the required acceleration of gravity (g) are not specified for most methods. Each laboratory must, therefore, establish values for each function on the basis of available equipment. In these methods, the phrase “centrifuge as for hemagglutination tests” has been used, and it equates to centrifugation at 1000 × g for 15 seconds. For washing RBCs, centrifugation equivalent to 1 minute at 1000 × g is required. In other instances, centrifugation is used to pack red cells or remove particulate matter; this requires centrifugation equivalent to 5 minutes at 1000 × g.

Note: Equipment and materials that are commonly available in immunohematology laboratories (eg, Pasteur pipettes, serologic centrifuges) have been omitted to conserve space. For the same reason, reagent formulae and storage parameters are given in Appendix A, rather than in each method involving their use.