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BOOK REVIEW

Diagnostic Histochemistry, Mark R. Wick, (Ed.), (University of Virginia Health Sciences Center, Charlottesville, USA). Cambridge University Press, Cambridge, New York, (2008). 460 pp., Hardback, price: £70, \$135, ISBN: 9780521874106

I was somewhat surprised, but extremely pleased, to see publication of this book, which is based on the application of classical staining methods in diagnostic histopathology and is proof of their endurance and continuing use despite the advent of a range of additional and more modern techniques. The last books of a similar nature appeared almost two decades ago (Spicer, 1987; Filipe and Lake, 1990) and I thought that this might have been the end of the line for publication of such books in light of the overwhelming use of immunohistochemical techniques in histopathological diagnosis. This book has restricted itself to classical staining techniques and does not include any immunohistochemistry whatsoever or applications of modern diagnostic tools such as molecular analysis, cytogenetics, proteomics or ultrastructure. On the contrary, the book has provided evidence that because techniques belong to an old and sometimes extremely antiquated discipline, they still remain valuable and useful as diagnostic tools. As long as scientific techniques continue to provide important information, they need not be abandoned. This old methodology still continues to play an important role in the histopathology laboratory, and this is especially true due to the fact that many of these staining methods are cheap, reliable, fast, result in permanent preparations that are easy to interpret and archive, and provide diagnostic information that cannot be achieved by other means. Unlike most histochemistry books, this volume is not a recipe book listing detailed procedures and does not cover the chemical aspects of the staining methods.

The book is divided into 17 chapters with 29 contributors. The opening chapter provides a general overview of tissue acquisition and subsequent processing with emphasis on the histotechni-

ques required to ensure optimal preservation of the samples. Only too often do histopathologists receive valuable material that has been inadequately collected in the clinical setting making subsequent processing and analysis difficult or nearly impossible. Has the material been preserved with consideration for what we are looking for: parasites, fungi, protozoa, microbial infections, tumors? Has the correct fixative been used and is this the optimal fixative for further diagnostic procedures such as conventional wax-embedding and routine histology, enzyme histochemistry, immunohistochemistry, electron microscopy? Has consideration been given to possible leaching of components during processing? Has the tissue been frozen properly for cryotomy to prevent freezing artefacts or was it just dumped in liquid nitrogen with resulting damage to the tissue? Has the tissue been properly orientated? Has the tissue been properly identified and labeled? The opening chapter has a short section on lectin histochemistry, though there are few examples to illustrate lectin labelling included in the book.

The subsequent chapters deal with diagnostic histochemistry and diseases on a regional and systematic basis: head and neck, lungs, mediastinum, heart, gastrointestinal tract, liver, urinary system, female and male reproductive systems, breast, endocrine system, skin, muscle, blood and lymph, nervous system and the eye. All the chapters include examples of illustrative case studies showing applications of the staining techniques in specific clinical disorders. There are some 850 really excellent color micrographs, which are very well presented and aesthetically produced and the quality of the printed images is a credit to the editor and publisher despite the fact that the material is of a pathological nature. The book comes with a CD-ROM containing all the images and this will provide a useful source atlas for histopathology teachers. Many of the micrographs lack any indication of magnification and when provided in the legends, it is unclear what the magnification values represent (e.g. $\times 200$, $\times 400$, $\times 1000$). Such magnification figures lack any scientific value

whatsoever and I would have liked to see linear scale bars on all the micrographs.

The history of diagnostic pathology since 1880s has been accompanied intimately by histochemical staining techniques (Coleman, 2000, 2006a; Pearse, 1953, 1960). Several techniques described and cited in the book from this period are still widely used and invaluable in histopathology and microbiology laboratories. These include: Perl's technique for iron of 1867, Gieson's trichrome stain dating back to 1889, Ziehl and Neelsen's technique for tubercle bacilli of 1882 and 1883, and Gram staining for bacteria of 1884. In fact, there is no other extant discipline in the life sciences, apart from optical microscopy, that has lasted so long (Coleman, 2006a). It is a long time since I have encountered a new scientific book with so many references dating back more than 50 years. The book is filled with eponyms of discoverers of staining techniques (e.g., Heidenhain, Giemsa, Golgi, Gomori, Gram and Masson) and it is remarkable how these have remained in the common vernacular of histologists and pathologists (Coleman, 2006b). The only other life science where a similar situation exists is in anatomy, despite the (failing) efforts of the learned nomenclature committees to replace them with non-eponymous descriptive terminology.

It remains abundantly clear, and the proof lies in this publication, that the use of dyes and stains remains a backbone in pathological diagnosis (Coleman 2006a, b). This is true despite the fact that during the last half-century there have been virtually no new additions to the "classical" repertoire of staining techniques. Perhaps the last such introduction was the picrosirius red stain introduced by Sweat et al. (1964). This has taken a new lease of life, especially when combined with polarizing microscopy, and it is proving invaluable in showing fibrosis in liver disease, cardiac infarct or salivary gland tumors. I was surprised to find that this technique was not included in the book.

I would have liked to have seen expansion of the opening chapter to include a short "history" of staining techniques in histopathology to provide added perspective. In my opinion, the best concise history of histochemistry ever written can be found in the opening chapter in the early editions of Tony Pearse's classic textbooks (1953, 1960). I would have appreciated greater reference to the "classical" histochemistry textbooks of some of the outstanding histochemists of the last century such as Gomori (1952), Pearse (1953, 1960), Lison (1953), Lillie (1954) and Spicer (1987). These textbooks are common on library shelves in histology and pathology departments and are still

widely used as useful source material. These authors were the forefathers of popularizing many of the surviving techniques illustrated in this book.

The current book complements, but does not replace, the widely used histochemistry textbooks that include recipes for detailed procedures and which remain key reference source material in so many laboratories (e.g., Luna, 1968; Pearse, 1960; Sheehan and Hrapchak, 1980; Bancroft and Stevens, 1982; Bancroft and Cook, 1984), where earlier editions are frequently favored over the later ones. Today the Internet is increasingly used as source material for staining techniques, though there is no real substitute for a really good histochemistry or histopathology book. Many of the basic tools of the histochemist have remained unchanged for a half-century or more (Coleman, 2000). Unfortunately, the old-style, finger-stained, classical histochemist with an understanding of dye chemistry is now almost extinct, or if still surviving, is commonly treated by colleagues as an inferior class of scientist owing to the continuing use of antiquated methodology.

In the world of molecular biology, gene arrays, nanotechnology, automated staining and novel imaging systems, it is heartwarming to see the appearance of a book celebrating the survival of diagnostic staining techniques in histochemistry. Overall this is a very attractive book that deserves a place in every pathology laboratory and medical library. There are few scientific disciplines where art, aesthetics and science are so intimately combined or have such impact despite their longevity. Where are the aesthetics in a Western blot or a gel?

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