BOOK REVIEW

BIOLOGY OF MARIJUANA: FROM GENE TO BEHAVIOUR. Onaivi, Emmanuel S. (Editor). *London: Taylor and Francis, 2002, 635 pp., $150, hardcover.*

"The truth is rarely clear and never simple" Oscar Wilde

The number of new books, reviews and dedicated journal issues on cannabis and cannabinoids being published in the last few years is remarkable. The perspectives from which cannabis may be approached range from the macro- (e.g., public health, legal and political) level down to micro- (molecular and neurophysiological) level, with a multitude of positions in between. Any new book on cannabis must be assessed, therefore, with these dimensions in mind.

Choosing an editorial path through the modern cannabinoid landscape is not a matter for the faint of heart. Clear and succinct reviews should serve as signposts for the future of cannabis research. For example, the 1999 report from the Institute of Medicine carefully reviewed the existing research with a view to assessing the therapeutic potential of cannabis, while Zimmer and Morgan's *Marijuana Myths, Marijuana Facts* opted for a more critical interpretation of the literature. Whatever the approach, a new publication must carefully describe its aims and intended audience to avoid losing relevance as a reference tool.

With the publication of *Biology of Marijuana: From Gene to Behaviour*, Emmanuel Onaivi has produced an addition to the cannabinoid bookshelf which is full of detail, but which lacks sufficient overall structure and coherence to give it any real merit as a unified work. It is perhaps

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unfortunate that this textbook arrived for review at the same time as the publication of an issue of a specialty journal dedicated to endocannabinoids (*Prostaglandins Leukot Essent Fatty Acids* 2002;66(2/3)). This issue presented reviews of the most up-to-date research in this area, written by many of the same outstanding authors that have contributed to Onaivi's book, with a clear focus and solid framework for reference. A further difficulty is that textbooks are notoriously out of date by the time they come to press, and as a result there are no references in *Biology of Marijuana* published later than 2000. This reduces the books value as a reference tool.

The choice of title is unfortunate, as it is really not strictly about the biology of marijuana; it is a collection of reviews of various aspects of the scientific cannabinoid literature, and at times the text wanders far from the cannabis plant itself. As a whole the book is not well organized. The organization of the material does not follow any clear logic. The topics jump randomly from molecular studies to clinical effects and back again, with no clear pattern emerging to tie them all together. The individual contributions are, for the most part, well written and balanced and provide some useful perspectives on cannabinoid pharmacology. The list of authors includes internationally recognized experts on the areas involved. Chapters of particular relevance to clinicians include Sañudo-Pena and Fride on movement disorders, Solowij on cognitive function, and Murphy on endocrine function; while the chapters by Glass and McAllister on cannabinoid mediated signal transduction and Onaivi and others on cannabinoid receptor genetics are detailed and useful overviews. The last chapter by Hubbbard on adverse events, however, does not contribute meaningfully to the overall work, as it draws substantially from other reviews of adverse effects. Readers are better advised to stick to the relevant chapters rather than rely on this rather scant handling at the end of the book.

In summary, Onaivi has taken on a work that is timely as we enter a second decade of exciting progress in the neurobiology of cannabinoids. It joins an expanding collection of reviews of this literature, and will be a useful source of reference to clinicians and scientists. Reviews must acknowledge their limitations, and real scholars should always go to the primary references to support the assumptions on which to base their hypotheses and arguments.

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