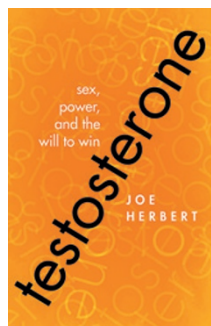


Sex, on steroids



**Testosterone:
Sex, Power, and
the Will to Win**

by Joe Herbert

OXFORD UNIVERSITY
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Pity poor testosterone. A critical hormone in living systems, with diverse and far-reaching physiological effects, and a subject of extensive and longstanding scientific study, but in the common lexicon it all too often finds itself vying with the word 'booze' as a prefix for '-fuelled' to denote aggressive or boisterous excess, or is implicated as a substance used illegally to enhance athletic performance. In this concise account, internationally renowned endocrinologist Joe Herbert, emeritus professor of neuroscience and fellow of Gonville and Caius College, Cambridge provides some much-needed positive PR and shows that there is a lot more to testosterone than ill-advised outbursts of temper, sporting drug cheats and over-sized bodybuilders.

Tantalizingly subtitled *Sex, Power, and the Will to Win*, the book provides a detailed introduction into the complex role played by testosterone in a wide variety of fundamental physiological processes such as foetal development, sexuality and reproduction as well as physical drives as diverse as making love, money and war. This is an impressive list of achievements for a small molecule (by biological standards) and it is clear from the outset that testosterone exerts an influence far above its relatively modest size.

Without much preamble, *Testosterone* begins with chapters covering the basic biology and neurobiology of testosterone, its production and its biological transport. This is followed by an account of its role in shaping physiological and behavioural aspects of the male throughout his life including sexual characteristics and reproduction. The critical nature of timing in exposure of the foetus to testosterone and the result of things going awry, leading to the production of too much testosterone or the inability of the developing foetus to detect that which is produced normally are clearly adumbrated. The narrative then

moves onto 'Testosterone and Sex' which discusses the effects of testosterone in such arenas as breeding and group hierarchy. A central theme is the sharp behavioural and physiological differences between human sexuality and fertility, and mating in other mammals and although striking, not all of the material discussed in this chapter would pass a rigorous test of gender politics.

The written style in these early chapters can feel a little stiff in places and although this may be due to the need to introduce a number of diverse scientific concepts in short order, the result is that the early chapters read more like a first-year undergraduate primer on neurobiology than a popular science work.

With the fundamental biological aspects of testosterone apparently neatly dealt with, the account moves onto a rather more descriptive account of the role played by testosterone in risk-taking, financial markets and war. Here the style relaxes somewhat, making these some of the more easy-going and accessible chapters and providing an enjoyable, if less than revelatory, counterpoint to the more technical sections of the book. After this, however, the sequencing of the chapters goes a little wonky as the narrative returns to more overtly biological and neurobiological concepts such as the role of testosterone in female fertility and its effect on the brain. It seems that these topics would have sat more naturally alongside earlier (more technical) chapters. Separating these important areas from earlier discussions of fundamental topics disturbs the narrative flow and results in a certain amount of repetition.

Whilst focussing initially on the role of testosterone as the principal driver of male sexual development this is not just a book for the boys. The author is at pains throughout to point out that testosterone is not exclusively a male hormone and its importance in female sexuality and reproduction is referred to repeatedly throughout the book. It receives a fuller treatment in a chapter entitled 'Testosterone in Women', which provides some of the more unexpected revelations of the book and one of its best lines, where in discussing reasons for the commonly observed decline in sexual activity in post-menopausal women, the author points to "an ageing or overfamiliar partner" (!) as a possible factor. The importance of testosterone to both men and women underlines the complexity of the

physiological role played by hormones in general and is one of the most fascinating yet frustrating aspects of the book: that in this field, observations are rarely clear-cut and conclusions must be bracketed with caveats. In the words of the author in the preface this is a story "full of twists and turns. No simple message or bottom line."

In content and style then, *Testosterone* is science writing for the serious-minded and demands concentration on the part of the reader. The text which, as noted previously, tends to a formal rather than chatty voice, is almost overstuffed with information and brims with an at times confusing mixture of footnotes and references, supplemented by retro-style black and white graphs and line drawings. These all act to reinforce the rather straight-laced feel of the book and I would be interested to read a longer, more relaxed treatment of what is without doubt an important and fascinating subject.

In terms of reader experience, chapter-sequencing and footnote issues notwithstanding, the book is well presented with (in the hardback edition at least) a pleasing feel in the hand and text delivered in a clear, crisp serif font. The subject matter is made easier to digest for the uninitiated by being served up as snack-sized chunks such as 'Testosterone and Sex', 'Testosterone and Aggression' and 'Testosterone and War'. Each chapter is prefaced with pertinent literary, historical and scientific quotes with more interspersed throughout the text.

A word of warning for chemists: as might be expected in view of the pedigree of the author, this is a story about the neurobiology and behavioural effects of testosterone rather than its chemistry. Readers craving molecular structures or looking for an account of such topics as the biosynthesis and metabolism of testosterone will be disappointed as they will not find them in this book. What they will find however is an intriguing introduction to the complex neurobiological, physiological and sociological functions of a small but truly remarkable molecule that in the book's own words "might be essential but not sufficient for the bonding ... that characterises much, but certainly not all, of the human male's sexual behaviour and which poets, rather than scientists, call love." □

REVIEWED BY MATTHEW SALTER

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