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## Preface

The first protocols book, *Free Radical and Antioxidant Protocols (1)* was published in late 1998. Sections were divided into three parts, covering selected biochemical techniques for measuring oxidative stress, antioxidant (AOX) activity, and combined applications. In choosing the 40 methods to be included in that book, I realized there were considerably more of equal value than that which we could have presented in a single volume. To produce a comprehensive resource, this book and a third are being compiled to expand coverage of the field.

A summary of papers (2) published on this important subject emphasizes the continuing rapid growth in oxidative stress investigations relating to our understanding of biochemical reactions, their relevance to pathophysiological mechanisms, how disease may arise, and how therapeutic intervention may be achieved (3). Although there is some overlap between the categories, the analysis shown below illustrates where current studies are concentrated and are almost evenly distributed between free radicals and AOX. Over the last 4 yr, there has been a 55% increase in the number of papers published in the area.

**Table 1**  
**Recent Citations of Oxidative Stress Biomarkers**

	1997	1998	1999	2000
Free radical mechanisms	60	72	75	92
Free radicals in disease	78	88	109	111
AOX mechanisms	87	91	150	160
AOX in disease	94	122	155	204
Applications for treatment	0	2	5	8
<b>TOTAL</b>	<b>319</b>	<b>375</b>	<b>494</b>	<b>575</b>

*Oxidative Stress Biomarkers and Antioxidant Protocols* has added 33 more high-tech methods written by 73 authors from prestigious universities/institutes around the world, which together with our previous volume 108, provide a wide range of procedures for evaluating perturbations in cell function resulting from increased oxidative stress. Although primarily a reference for research, these two books also provide easy-to-follow directions that make them readily adapt-

able for academic use as a laboratory manual for graduate students in the basic sciences.

Of particular interest is the final chapter, which describes how the grouping of data from more than two biomarkers can be used to derive an appropriate statistical measure of change in the biological systems under study. The ability to more accurately interpret oxidative stress results in terms of either free radicals or AOX by using data from each to characterize laboratory or clinical observations, greatly enhances the value of this specific biostatistical approach.

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**Donald Armstrong**

## References

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2. Internet Grateful Med (2001).
3. Armstrong, D. (1994) *Free Radicals in Diagnostic Medicine, Advances in Experimental Medicine and Biology*, vol. 366. Plenum Press, NY.



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