

EDITORIAL

Pharmacology and Toxicology in the New Era of Biomedical Research

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The Pharmacology and Toxicology section in *Experimental Biology and Medicine* has a long tradition of publication of papers dealing with drug action and toxicity at multiple organ system levels. There are two characteristic features of Pharmacology and Toxicology papers published in the past: First, papers addressing target organs, cells, or molecules on which a drug or toxicant acts. Papers in this category are often related to identification of the targets of a known drug or toxicant. Second, papers produced from studies using a known target organ, cell, or molecule to screen several drug candidates. These studies are often related to identification of the most effective drug or potent prototype toxicant on a defined target. These Pharmacology and Toxicology studies published in *EBM* involved a multidisciplinary approach, which has been an important feature of the journal.

At the turn of this new century, advances in more sophisticated biomedical science and the revolution of information technology dictated a more integrated and interdisciplinary approach to biomedical research. Facing the new challenge, as well as recognizing this new opportunity, *EBM* has taken the lead in establishing a comprehensive coverage of interdisciplinary biology and medicine. This new initiative represents the vision and the leadership of the new Editor-in-Chief, Dr. Steven R. Goodman.

Pharmacology and Toxicology has also entered this new era of biomedical research. The traditional approach to the efficacy and toxicity of new drugs remains the mainstay of drug discovery and development. The application of “omics” technologies significantly improves the high throughput approach. The adaptation and optimization of the “omics” in Pharmacology and Toxicology involve an integrated interdisciplinary approach and represent a major area of coverage for the new *EBM*. Therefore, the Pharmacology and Toxicology section will extend its coverage from studies addressing a single target effect to an integrated multiple

target effect of drug candidates and toxicants. In fact, this approach has become a major focus of the Pharmacology and Toxicology section in the last few years. Examples of this approach are microarray analysis of drug effects on multiple gene expression of different organ systems, protein profile changes detected by proteomics, and metabolic product profiles revealed by metabolomics. However, integration of these “omics” technologies to generate more comprehensive predictions will become a major focus of the journal.

Identification of multiple targets of a candidate drug using the new “omics” technologies extends the scope of the Pharmacology and Toxicology section. Complementary and alternative medicine (CAM) represents a new dimension of Pharmacology and Toxicology, dictating another extension of the scope of the journal. The value of CAM in the modern era of medicine has been significantly raised because advanced technologies have brought novel insights into the unique features of CAM. Publication of CAM papers, in the past, often emphasized the active ingredients in the complex preparation of CAM. However, many clinically tested and promising CAM preparations cannot be adequately analyzed regarding their active ingredients. The National Center for Complementary and Alternative Medicine (NCCAM) has recognized the value of the complex preparation and has therefore established a program to support studies addressing the efficacy and safety of complex preparations of CAM, instead of emphasizing only the identification of active constituents in CAM. Integrated studies using advanced technologies to address the efficacy and safety of CAM preparations will be included in the scope of the Pharmacology and Toxicology section of *EBM*.

Therefore, entering the modern era of biomedical research, Pharmacology and Toxicology has extended its scope from the one drug on one action site approach to one drug on multiple action sites; as well as complex preparations on multiple organ systems. Researchers employing the integrated multidisciplinary and interdisciplinary approach are strongly encouraged to submit their manuscripts to *EBM* for consideration for publication.