

FROM THE EDITORS

It is easy to argue that we are entering a new golden era of science and engineering. The predominant approach of conducting timely and in-depth scientific research is forever changed from cycles of simple experiment and theory to cycles that combine of experiment, theory, mathematical modeling, and analysis. The landscape of science is now clearly dominated by the peaks of biosciences. Integrative and interdisciplinary research in life sciences and engineering is no longer merely a slogan but aggressively and collectively pursued and practiced by researchers. This shift of paradigms greatly enhances the central importance of mathematical and computational modeling and analysis in scientific and engineering endeavors. With this exciting backdrop in mind, the American Institute of Mathematical Sciences (AIMS) and Beihang University have decided to launch a joint international journal on mathematical biosciences and engineering. This journal will maximally serve the scientific communities in both developed and developing countries.

Mathematical Biosciences and Engineering (MBE) is a quarterly international journal focusing on new developments in the fast-growing fields of mathematical biosciences and engineering. Areas covered include general mathematical methods and their applications in biology, medicine, and engineering, with an emphasis on work related to mathematical and computational modeling, and to nonlinear and stochastic dynamics. The editorial board of *MBE* is devoted to promoting cutting-edge integrative and interdisciplinary research that bridges mathematics, life sciences and engineering.

General topics appropriate for *MBE* include, but are not limited to, all areas of mathematical biology and medicine, computational neuroscience, biomedical signal processing and data analysis, models based on nonlinear dynamics and stochastic processes that aim to understand biomedical and engineering problems, and modeling and designing of biologically inspired engineering systems. To be considered by *MBE*, a paper (except for invited expository papers) should be in one (or a combination) of the three categories. (a) papers developing and (mathematically) analyzing mathematical models that have concrete applications in biomedical sciences and engineering; (b) papers devoted to mathematical theory and methods, with a clear scientific and engineering motivation, whose results must lead to an improved understanding of the underlying problem; and (c) papers using numerical simulations, experiments, or both to reveal or explain some new scientific and engineering phenomena, where mathematical analysis plays a major role in the analysis and process.

To be considered by the journal, a paper must contain a comprehensive introductory section and an in-depth discussion section, closely tied to applications. The scientific importance and motivation of the paper and its conclusions should be made clear at the outset. Furthermore, the paper must be presented in such a way that its main results and methods, together with their applicability, can be comprehended by people from a wide range of scientific fields. Manuscripts applying standard techniques to slightly new problems or providing mathematical analysis in the absence of significant scientific motivation will not be considered. Papers oriented toward experimentation or numerical simulation must have a novel and sound theoretical explanation.

While there are a few well established journals in mathematical biology, *MBE* is unique and timely in three key aspects. (1) *MBE*'s broad coverage includes most areas of mathematical biosciences and engineering; (2) *MBE*'s editorial board comprises a diverse group of prominent international leaders and young and energetic researchers who are aggressively leading the way in various emerging areas; (3) *MBE*'s publishers, the American Institute of Mathematical Sciences and Beihang University are highly dynamic, adaptive and proactive organizations that are well suited for today's fast-moving research environment. With your keen participation as reader, author, reviewer and editor, we are confident that *MBE* will not only fulfill the needs of the research communities in mathematical biosciences and engineering but also establish itself as an important and popular forum and thus as a leading journal in the areas it covers.

We would like to wholeheartedly thank all the organizations and the people involved in the preparation of this inaugural issue. In particular, we would like to thank the generous financial and manpower support and commitment provided by Beihang University, without which, *MBE* will not even be conceived. We would also like to thank the AIMS director, Professor Shouchuan Hu, for his constant encouragement and professional help, without which *MBE* will simply never come to existence. The launch of this journal has received timely, significant and indispensable editorial support from the College of Liberal Arts and Sciences (CLAS) Journal Office at Arizona State University¹. Most wholeheartedly, we would like to express our profound gratitude to its director, Dr. Victoria Hay, whose contribution to *MBE* rivals all of us.

Yang Kuang
Ying-Cheng Lai
Zhiming Zheng

¹Thanks to Dean David A. Young, who had the insight to see the intrinsic value of a central editorial office serving CLAS faculty, and obtained the substantial funding required to establish it.