

EDITORIAL**Frontiers in NMR metabolomics**


This Special Issue on *Frontiers in NMR Metabolomics* offers a glimpse of recent technological and methodological advances in NMR-based metabolomics. This collection of manuscripts presents examples of some recent applications of NMR-based metabolomics, includes discussions on challenges and limitations facing the field, and highlights ongoing efforts to overcome these problems and advance the utility of metabolomics to a broad range of scientific applications. As a result of these and other efforts, the field of metabolomics continues to experience exponential growth, specifically since it has made substantial contributions to nearly every area of scientific enquiry reliant on biological samples. This is especially true for clinical studies and the associated search for diagnostic and prognostic biomarkers. There have literally been hundreds of clinical metabolomics studies reported in the scientific literature that have identified potential metabolic biomarkers for nearly every human disease. Furthermore, metabolomics has been employed to address issues in drug discovery, environmental studies, agriculture, plant biology and nutrition; as well as to enhance our basic understanding of cellular biology and human diseases. While mass spectrometry (MS) is a popular choice owing to its high sensitivity, NMR affords unique characteristics including high reproducibility and easy quantitation, that have provided invaluable and notable contributions to all aspects of the field of metabolomics. Many characteristics of NMR, including its non-destructive nature and the ability to monitor in real time in vivo or in vitro metabolism, are complementary to MS and hence NMR continues to be a vital resource for scientific investigations dependent on metabolomics. The manuscripts that comprise this Special Issue describe the important contributions of NMR-based metabolomics to a variety of scientific endeavors.

In conclusion, NMR-based metabolomics has benefited a wide diversity of scientific studies and continues to

experience explosive growth. The new techniques, applications, and capabilities highlighted in this MRC Special Issue on *Frontiers in NMR Metabolomics* will enhance and expand the utility of NMR to the metabolomics community. Simply put, *the future looks bright for NMR-based metabolomics*.

PEER REVIEW

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