

Next-generation Metabolomics in Critical Care Medicine

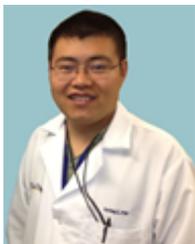
Twenty-first-century medicine is entering into the omics era. Metabolomics aims to measure the small molecules (metabolites) within cells, biofluids, or tissues using various analytical techniques, at the same time reflecting genome, transcriptome, or proteome changes. Next-generation metabolomic approaches globally measure hundreds and thousands of metabolites (such as amino acids, nucleotides, and lipids) in a given time. The metabolomic analysis allows us to identify and quantify the metabolic profile of any cell or tissues dynamically, detailed investigate biological pathways and provide information about the communications between different organ systems. Therefore, metabolomics offers strategic advantages for the elucidation of the new roles of metabolism in disease, the identification of biomarkers, and the development of new therapeutics.

The intensive care unit is an uncharted frontier. Emergency illness often causes significant disruptions in metabolic homeostasis, characterized by organ and system function failure, i.e., pathological changes occur at the system, organ, cellular and subcellular levels. The most prominent metabolic violations are observed in septic patients. Therefore, assessing the metabolome could have major applications in critical care medicine for disease diagnosis, prognosis evaluation, and development of novel therapeutic strategies.

In this special issue of the journal Signa Vitae, we aim to provide our current understanding of emergency medicine using high throughput omics techniques, primarily metabolomics. We welcome submissions covering the following subtopics:

- Metabolomics and lipidomics to understand the pathogenesis of various critical diseases including but not limited to sepsis, acute respiratory distress syndrome (ARDS), chronic obstructive pulmonary disease (COPD), and organ failure.
- Differential diagnosis of various critical diseases by omics techniques.
- Using metabolomics in predicting the prognosis of critical illness.
- Development of novel therapeutic strategies in emergency medicine using metabolomics.
- The integration of multi-omics approaches with metabolomics as a part is also welcome.

We accept original articles, review articles, short reports, meta-analysis, and letters to the editor. The clinical utility of metabolomics in emergency medicine is just beginning to emerge. We sincerely invite you to submit your valuable work to this special issue, and your contribution will improve the practice of emergency medicine and, ultimately, save lives. We commit to providing rigorous, constructive, efficient, and transparent peer review. The deadline for submission of this special issue will be on 31 August 2021.

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