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Recent advances in proteomic-based diagnostics of cystic fibrosis

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Abstract: Introduction Cystic fibrosis (CF) is a genetic disease characterized by thick and sticky mucus accumulation, which may harm numerous internal organs. Various variables such as gene modifiers, environmental factors, age of diagnosis, and CF transmembrane conductance regulator (CFTR) gene mutations influence phenotypic disease diversity. Biomarkers that are based on genomic information may not accurately represent the underlying mechanism of the disease as well as its lethal complications. Therefore, recent advancements in mass spectrometry (MS)-based proteomics may provide deep insights into CF mechanisms and cellular functions by examining alterations in the protein expression patterns from various samples of individuals with CF. Areas covered We present current developments in MS-based proteomics, its application, and findings in CF. In addition, the future roles of proteomics in finding diagnostic and prognostic novel biomarkers. Expert Opinion Despite significant advances in MS-based proteomics, extensive research in a large cohort for identifying and validating diagnostic, prognostic, predictive, and therapeutic biomarkers for CF disease is highly needed.