

Case ID:M19-111L
Published: 4/2/2020

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Analyzer for Detecting Iron Levels in Bodily Fluid

According to the World Health Organization, iron deficiency is one of the world's top nutritional disorders and a leading cause of anemia. Hemochromatosis, another blood disorder associated with iron, but an excess of iron, has an incidence of 1 in 200 people of northern European origin and can lead to irreversible organ damage. While iron deficiency and hemochromatosis are common worldwide diseases, they are often overlooked and underdiagnosed. This may be because measuring iron panel biomarkers are expensive and time-consuming and require trained experts and specialized instruments.

Researchers at the Biodesign Institute of Arizona State University have developed a novel point-of-care analyzer that can detect, screen and monitor iron-related disorders, including iron deficiency and hemochromatosis. Utilizing sensor cartridges with simple but sophisticated mechanisms to extract plasma from whole blood, this analyzer can sensitively and selectively detect iron metabolism biomarkers in just 5 minutes. This user-friendly, low cost analyzer, is highly selective and sensitive without the need for technical experience or specialized laboratory instrumentation and represents a universal platform that can be implemented in even the most remote or underserved areas.

This analyzer is a substantial improvement over current iron testing methods and could lead to early detection, screening/monitoring and treatment of iron-related disorders.

Potential Applications

- Detection of iron metabolism biomarkers:
 - o Iron deficiency detection & monitoring
 - o Hemochromatosis detection & monitoring
 - o Detection & monitoring of other iron-related disorders

Benefits and Advantages

- Accurate point-of-care performance

- Miniaturized and user-friendly, particularly regarding handling and disposal
- Colorimetric readout of total iron measurements within about 5 minutes
- The sensor cartridges have a reasonable shelf-life at room temperature
 - o Greater than 30 months
- Low manufacturing cost
- Selectivity in complex real-world samples
- Eliminates the need for technical expertise, laboratory space and specialized instrumentation
- Does not require prior extraction of plasma from whole blood

For more information about this opportunity, please see

[Press Release - 2019](#)

For more information about the inventor(s) and their research, please see

[Dr. Forzani's departmental webpage](#)