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## **Investigation of Red Blood Cell biomechanics in Chronic Fatigue Syndrome using Microfluidics**

Cellular deformability is an important biomarker, which can distinguish between healthy and diseased cells. We have used a high-throughput microfluidic platform to measure cellular deformability of red blood cells (RBCs) obtained from CFS patients, comparing them against cells obtained from healthy individuals. Individual cells were perfused through microfluidic channels made from PDMS. Using high-speed microscopy and subsequent image analysis, we measured the following parameters: average transit velocity, entry time, and elongation index. They are flown using a custom vacuum delivery system. By measuring these parameters, we were able to quantify cellular deformability and thereby investigated the behavioral difference of RBCs between healthy donors and CFS patients. The results show that RBCs obtained from CFS patients are less deformable than healthy ones. This decrease in RBC deformability can contribute to the pathology of rheological diseases.