The exponential growth in Internet of Things (IoT) devices and wearable sensing technologies has created an unprecedented opportunity for personalized medicine by enabling real-time biomonitoring of individuals and actionable feedback. Currently, commercialized IoT devices and wearable sensors are only capable of tracking physical activities and vital signs. However, these devices fail to access molecular-level biomarker information that provides insight into the body's dynamic chemistry. Sweat-based wearable biomonitoring has emerged as one of the most promising candidates to merge this gap because sweat is a rich source of biomarkers that can be retrieved unobtrusively. Here, we present a wearable sweat analysis platform for *in-situ* measurement of sweat analytes over the period of a day. Utilizing a wearable multi-compartment design, our device performs sweat analysis at key intervals to provide extended temporal analysis.