

Swinburne Software Labs trial success with Apple Watch® and FITBIT® for Medibio's Stress app

Highlights

- **Independent confirmation *Apple Watch* and *Fitbit Surge* heart rate data provides high level accuracy for Medibio's stress diagnostics and analytics**
- **Medibio's stress algorithm successfully calibrated to utilise leading wrist based wearable data**
- **Work completed to integrate the *Apple Watch* and *Fitbit Surge* with Medibio's Digital Mental Health Platform**
- **Significantly expanded market opportunity for Medibio's stress analytics in the corporate and consumer space**

Medibio Ltd (**MEB** or the **Company**) is pleased to announce positive results from the evaluation of market-leading wrist-based wearable devices under its partnership with Swinburne Software Innovation Lab (SSIL).

To expand its corporate and consumer stress applications, Medibio and SSIL evaluated the heart-rate accuracy and reliability of a number of leading consumer devices. SSIL confirm that both the *Apple Watch* and *Fitbit Surge* meet all performance requirements, allowing them to be used successfully as an alternative to ECG monitors in Medibio's Corporate Stress Product. It also paves the way for the release of a Consumer Stress App.

In addition to validating the quality of data generated by the *Apple Watch* and *Fitbit Surge*, the SSIL has successfully:

- Completed the work required to collect the data seamlessly from the *Apple Watch* and *Fitbit Surge* in Medibio's cloud based Digital Mental Health Platform,
- Assisted in the calibration of Medibio's stress algorithm to utilise optical pulse rate data, from wearables in addition to ECG data, for stress analysis, and
- Benchmarked the heart-rate data quality of the *Apple Watch* and *Fitbit Surge* against a leading medical grade ECG monitor.

The Company's short term focus is to commercialise its Corporate Stress product using the *Apple Watch* and *Fitbit Surge*. This will involve strategic partners and key corporate clients who are already using the *Apple Watch* to demonstrate the end-to-end value proposition of a market leading wrist based wearable integrated with Medibio's Digital Mental Health Platform.

Wearable data quality

The evaluation involved 11 leading wearables and examined a number of key criteria including the ability to access the necessary data, reliability of data, ease of use, accessibility, and affordability. The wearable data quality was benchmarked against a Zephyr⁽¹⁾ Bioharness 3 (Biopatch,) a leading medical grade ECG monitor currently integrated with Medibio's Digital Mental Health Platform. This work is one of the few available pieces of independent research benchmarking the quality of the heart rate data from wearables.

The *Apple Watch* and *Fitbit Surge* were benchmarked by three separate testers over a minimum of 15 days of testing. Participants noted they could comfortably wear each device continuously for close to 20 hours, only removing to recharge. The data from each device showed excellent correlation to the benchmark device.

Platform Integration

In addition to the evaluation of data quality Medibio and SSIL completed the design of APIs (application programming interfaces) that automatically collect and transfer the data from the *Apple Watch* and *Fitbit Surge* to Medibio's Digital Mental Platform. This will allow Medibio to collect and process the data seamlessly from the *Apple Watch* and *Fitbit Surge* and undertake stress analytics in real time as is done with the existing ECG monitors integrated with its Platform.

Stress Algorithm calibrated to accommodate wearable data

The Company has also successfully calibrated its stress algorithm to work with optical heart-rate data available from the selected wearables. This initiative, in partnership with the SSIL, has been ongoing since October 2015 in anticipation of integration with Medibio's Platform.

Medibio's existing stress algorithm requires continuous heart rate and IBI (inter-beat interval) data which is extracted from the ECG output. Wrist based wearables provide blocks of average heart rate data from 1 second to 10-minute interval. SSIL assisted Medibio in calibrating the stress algorithm with various measures based on these average data blocks and were able to achieve accuracies of up to 94%, 87%, and 93% in distinguishing the 'Mild', 'Moderate' and 'Severe stress' cases. This is comparable to the best results achieved using EGC data.

⁽¹⁾ *Zephyr is a wholly owned subsidiary of Medtronic (NYSE: MDT)*

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About the Swinburne University Software Innovation Lab and the NICTA

SSIL is part of the National Information and Communications Technology Research Centre of Excellence (NICTA). It pairs the NICTA's world-leading information and communications technology research capabilities with Swinburne's agile, industry-focused software development expertise, creating new economic opportunities for major Australian industries. The SSIL is a software research and development lab delivering high-impact software solutions and research to industry.

About Medibio Limited

Medibio (ASX: MEB), is a medical technology company that has developed an objective test to assist in the diagnosis of depression, chronic stress and other mental health disorders. Based on research conducted over 15 years at the University of Western Australia, this test utilizes patented (pending) circadian heart rate variability and cloud based proprietary algorithms to deliver a quantifiable measure to assist in a clinical diagnosis. Clinical studies are being undertaken by Johns Hopkins University School of Medicine and Ottawa University, among others, to validate the test. This will potentially enable Medibio's technology to be the first FDA approved, objective, evidence based approach to the diagnosis mental health disorders for the medical industry. The technology also provides an objective method for the assessment of stress and mental wellbeing which can be translated to the workplace stress/wellbeing market, wearable technology, and App market. Located in Sydney, NSW, Medibio is listed on the Australian Stock Exchange.

Apple Watch® is a registered trademark of Apple Inc., registered in the US and other countries

FITBIT® is a registered trademark of Fitbit Inc., registered in the US and other countries

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