



DEPARTMENT OF THE AIR FORCE
TECHNOLOGY TRANSFER AND TRANSITION



AFRL TEAM SWEATS THE DETAILS FOR BIO PATENT

Wright-Patterson AFB, DAYTON – “Don’t believe everything you see on TV” is sound advice. However, when Air Force Research Laboratory (AFRL) scientists and engineers verify something, you can bank on it. The work of four AFRL scientists over a seven-year span has not only led to a patent, but it’s also opened the door for a family of patents monitoring human performance.

Sean Harshman, Ph.D. and Rhonda Pitsch, Esq. of the 711th Human Performance Wing (HPW), Jennifer Martin, Ph.D. of the Materials and Manufacturing Directorate (RX), and Claude Grigsby, Ph.D. of the Transformational Capabilities Office (RST) have spent years studying human performance in a variety of ways.

“Our lab focuses on non-invasive performance monitoring (technology),” said Harshman. “We have worked on other biosources like exhaled breath, saliva, stool, and urine. So, we thought sweat was worth investigating. The primary goal is to monitor performance without stopping the subject from continuing to do their job.”

Their patent, #11,547,326: Identifying, Quantitation and Analysis of Unique Biomarkers in Sweat, is expected to allow for more detailed sensor development that will in turn provide a higher level of accuracy when determining status, such as fatigue, of the warfighter. While there have been products and methods on the market making heady claims for such determinations for years, Harshman says they leave a lot to be desired.

“You can buy commercial sweat patches. However, we feel additional research is necessary to meet the goals of the Air Force,” Harshman explained. “Everybody wants (this technology), but more research is required. That’s where we’re at.”

Harshman said one reason sweat has been a difficult biosource to work with has been sampling. “Sampling properly is often overlooked. It can truly impact the data. We spent a large amount of time determining how to sample sweat properly to meet our goals,” he explained. “This patent will allow further sensor development of biomarkers from sweat collected from a biological subject. It will allow for determination of physiological

TECH SNAPSHOT

PATENT NUMBERS:

US 11,547,326

TECHNOLOGY NAME:

Identifying, Quantitation and Analysis of Unique Biomarkers in Sweat

INVENTORS:

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SOURCE:

US Patent and Trademark Office
www.uspto.gov

status of the biological subjects. We envision this technology ultimately translated to a wearable sensor for human performance monitoring, such as a patch.”

The larger goal of this project is to create a real-time sweat sensor that can be used both by the Department of Defense (DoD) and the commercial sector as the benefits to both the warfighter and athletes worldwide instantly come to mind. However, that’s not the initial point of this patent. The team applied for this patent to protect the intellectual property (IP) because they knew more patents were likely to come from their findings. As it turned out, that was the right decision.

“There are at least two other patents about how to sample sweat in different ways,” Harshman said. “We’re currently analyzing data to determine which of those are actually going to work to transition into a sensor.”