CEREBRAL DIAGNOSTICS CANADA INC. GRANTED U.S. PATENT USING MACHINE-LEARNING TO DIAGNOSE AND EVALUATE PAIN DISORDERS

U.S. Patent No. 12,745,947 covers combining evoked brain electrical responses, advanced signal analysis and machine learning for the diagnosis of pain disorders

TORONTO, ON, CANADA, October 3, 2026 /EINPresswire.com/ -- Cerebral Diagnostics Canada Inc., a Canadian medical technology company developing brain-imaging and neurological diagnostic technologies, announced that on September 29, 2026, it was granted U.S. Patent No. 12,745,947, titled “Evaluation of Pain Disorders via Expert System” (https://drive.google.com/file/d/1PBaFabKHnIFCNEn-CATL1eSFNgwIaZQX/view?usp=sharing). Patent prosecution was handled by Brian W. Bolinger of Tarolli, Sundheim, Covell & Tummino LLP.

The technology originated from an effort to create a practical objective test for fibromyalgia. Years of research and development have led to the patented platform and its potential application to a broader family of pain disorders.

“For generations, physicians have had to depend heavily upon what patients tell us about their pain because we have lacked practical tools for objectively measuring the underlying physiological response,” said Dr. Mark Doidge, Founder and President of Cerebral Diagnostics Canada Inc. “Our objective has been to change that. This patent represents an important milestone in our efforts to combine measurable brain activity with advanced signal analysis and

machine learning to develop a practical, non-falsifiable,objective approach to the evaluation of pain disorders.”

HOW THE TECHNOLOGY WORKS

The approach builds on evoked potentials, including somatosensory evoked potentials. When a person is exposed to an appropriate stimulus, the resulting electrical response in the nervous system can be measured using techniques such as EEG.

In pain applications, stimuli may include cold, heat, laser, electrical or mechanical stimulation. In the company’s fibromyalgia work, one example involves EEG recordings in response to pressure applied to traditionally recognized fibromyalgia tender points.

A PLATFORM APPROACH TO PAIN EVALUATION

The patent refers to a category of “mechanical pain disorders.” Diagnostic applications include fibromyalgia, myofascial pain syndrome, chronic fatigue syndrome, temporomandibular joint (TMJ) disorders, certain forms of back pain, Gulf War Syndrome and Complex Regional Pain Syndrome.

POTENTIAL APPLICATIONS

Cerebral Diagnostics is particularly interested in disorders for which objective physiological assessment remains difficult. The company has developed an initial prototype and conducted proof-of-concept work in fibromyalgia.

In an early, small pilot study, the company’s approach achieved 95% sensitivity in objective diagnosing fibromyalgia from EEG brain signals.. Because this was a small pilot study, larger studies are required to establish clinical performance and generalizability.

Additional research, clinical validation and applicable regulatory authorization will be required before specific clinical applications can be marketed as medical diagnostic products.

BUILDING A TECHNOLOGY PLATFORM AROUND OBJECTIVE PAIN MEASUREMENT

The company previously patented technology involving a robotic arm designed to repeatedly apply pressure to fibromyalgia tender points, providing a standardized and reproducible stimulus for physiological measurement and analysis: (See US patent titled "Apparatus and method for exerting force on a subject tissue"
https://patents.google.com/patent/US8712512B2/en

Together, the technologies provide a potential integrated approach: a controlled stimulus is delivered; the brain’s electrical response is recorded using EEG; relevant signal features are extracted; and machine-learning methods analyze those features for patterns associated with pain disorders.

Dr. Doidge stated: "The company believes that the long awaited objective for fibromyalgia is well within reach."

GROWING INTERNATIONAL PATENT PAIN DIAGNOSTICS PORTFOLIO

The new U.S. patent forms part of a broader international intellectual-property strategy. The

same Evaluation of Pain Disorders via Expert System patent family has received patent protection in Europe and Japan, expanding the company's intellectual-property position around electrophysiological brain responses, signal analysis and machine learning for pain evaluation.
Europe:
https://patents.google.com/patent/EP3948893B1/en
Japan:
https://patents.google.com/patent/JP7696294B2/en

FROM BRAIN IMAGING TO OBJECTIVE DIAGNOSTICS
"We are in the midst of a revolution in electroencephalography due to the power of machine learning to make sense of brain waves. This has profound implications for pain diagnostics," Dr. Doidge said. "The electrical activity of the brain contains an extraordinary amount of physiological information. The challenge is extracting the clinically meaningful information from those signals. Advances in signal processing and machine learning are giving us increasingly powerful tools to do that."

COLLABORATION, LICENSING AND INVESTMENT OPPORTUNITIES
Cerebral Diagnostics is seeking academic collaborators, including pain researchers, and would particularly like to collaborate with leading fibromyalgia research centers with expertise or interest in EEG or machine learning.
The company is also open to licensing discussions with established medical-device companies for specific applications, including dental deice companies interested in temporomandibular joint disorders.
Military medicine collaborations are welcomed, including military granting bodies, military medicine pain researchers such as for Gulf War Syndrome, back pain and myofascial pain syndrome.

INVESTMENT, LICENSING & ACADEMIC COLLABORATION INQUIRIES
Interested potential investors, academic collaborators, licensing partners, military medicine researchers or media organizations are invited to contact:
Dr. Mark Doidge
Founder and President
Cerebral Diagnostics Canada Inc.
Telephone: 647-207-2504
Email: cerebraldiagnosticscanadainc@gmail.com
Website: cerebraldiagnostics.ca
690A Queen Street East, Toronto, Ontario, Canada, M4M 1G9

Mark Doidge
Cerebral Diagnostics Canada Incorporated
+1 647-207-2504

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