Scientists Find Gut Microbiome Patterns May Predict ‘Invisible’ Fatigue

New scientific research now suggests that “invisible fatigue” may leave detectable biological signals in the gut, offering a new lens to study chronic tiredness


Dr Cheryl Yeo

SINGAPORE, SINGAPORE, February 10, 2026 /EINPresswire.com/ -- Fatigue is one of the most commonly reported yet least understood health complaints worldwide. Millions of people, particularly women, experience persistent exhaustion despite adequate sleep, balanced diets and otherwise healthy lifestyles. New scientific research now suggests that this so-called “invisible fatigue” may leave detectable biological signals in the gut, offering a new lens through which chronic tiredness could be understood.

In 2025, researchers at The Jackson Laboratory, a leading independent biomedical research institution, reported that specific gut microbiome patterns, when analysed using artificial intelligence and machine-learning models, were able to distinguish individuals with fatigue-related conditions from healthy controls with close to 90% accuracy. The findings suggest that fatigue may have a measurable biological footprint, even when standard medical tests appear normal. Unlike traditional approaches that rely largely on self-reported symptoms, the research analysed complex interactions between gut bacteria, immune markers, and metabolic signals. Scientists involved in the work noted that these biological signatures could help explain why fatigue often remains undiagnosed or misunderstood in clinical settings.

Fatigue That Is Hard to Measure and Easy to Dismiss

Conditions such as myalgic encephalomyelitis/ chronic fatigue syndrome (ME/ CFS) and post-viral fatigue have long challenged healthcare systems because they lack clear diagnostic markers. Patients frequently report feeling dismissed or told their symptoms are stress-related, psychological or a normal consequence of modern life.

However, a growing body of evidence suggests that the gut microbiome, the ecosystem of

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trillions of microorganisms living in the digestive tract, plays a central role in regulating energy metabolism, inflammation and immune signalling. Disruptions in this ecosystem may contribute to prolonged fatigue by altering how the body processes nutrients and manages inflammatory responses. Supporting this perspective, research summarised by the National Institutes of Health has highlighted links between fatigue severity and the presence of certain beneficial gut bacteria.

In studies involving people with ME/CFS, higher levels of Faecalibacterium prausnitzii, a bacterium associated with anti-inflammatory activity, were correlated with less severe fatigue symptoms. These bacteria are known producers of butyrate, a short-chain fatty acid important for gut barrier integrity and immune regulation. NIH researchers noted that an abundance of this bacterium was inversely associated with fatigue severity.

Together, these findings reinforce an emerging scientific consensus as fatigue may not simply be a matter of willpower or lifestyle but a complex biological state involving the gut, immune system and metabolism.

Why Women Are Disproportionately Affected

Globally, fatigue-related conditions are reported more frequently by women, yet remain under-researched and poorly understood. Hormonal fluctuations, caregiving responsibilities and chronic stress exposure can interact with metabolic and immune pathways, potentially increasing vulnerability to prolonged tiredness.

In high-pressure urban environments globally, fatigue has also become widely normalised. Long working hours, irregular meal timings and frequent reliance on caffeine or sugary beverages may temporarily mask exhaustion while allowing underlying biological strain to persist. Health researchers increasingly argue that this normalisation of fatigue delays deeper investigation and that recognising fatigue as a potential biological signal is an important step toward better long-term health outcomes.

Making Sense of the Science

According to insights shared by iAMHealth.live, a Singapore-based wellness platform, the microbiome research represents a meaningful shift in how fatigue is framed.
"Fatigue is often reduced to a motivation or stress issue, but the science increasingly suggests it can reflect underlying biological imbalances," says Dr. Cheryl Yeo, Founder of iAM Health.

"What makes this research significant is that it shows fatigue may leave measurable signals in

the gut, even when routine health checks come back normal. The gut microbiome influences over 90% of modern health problems”

Dr. Cheryl Yeo emphasises that while microbiome-based insights are not diagnostic tools at this stage, they help validate the experiences of individuals who feel persistently tired without clear medical explanations.

From Symptoms to Biological Signals

The application of artificial intelligence to microbiome research marks a turning point in fatigue science. By analysing thousands of microbial and metabolic variables simultaneously, researchers can identify patterns that traditional diagnostic approaches often miss. Scientists caution that further research is needed before such insights can be applied clinically.

However, many agree that this approach could eventually support earlier recognition of fatigue-related conditions and more personalised health assessments. More broadly, the findings contribute to a growing shift in health conversations, one that acknowledges the gut as a central regulator of energy, immunity and overall wellbeing.

A Broader Public Health Conversation

As fatigue becomes increasingly prevalent, experts stress the importance of not dismissing persistent tiredness as a normal by-product of modern living. For women in particular, recognising fatigue as a legitimate biological concern may help close long-standing gaps in research, diagnosis and care.

The emerging science suggests that listening to fatigue, rather than pushing through it, may be essential for understanding what the body is signalling beneath the surface.

About iAM Health
iAM Health is a Singapore-based wellness brand focused on education-led approaches to gut health, metabolism, and everyday vitality. Founded by Dr. Cheryl Yeo, the brand aims to translate emerging scientific research into accessible insights that help individuals better understand their bodies and health signals.

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