Medical Xpress

Scientists find clues into cognitive dysfunction in chronic fatigue syndrome

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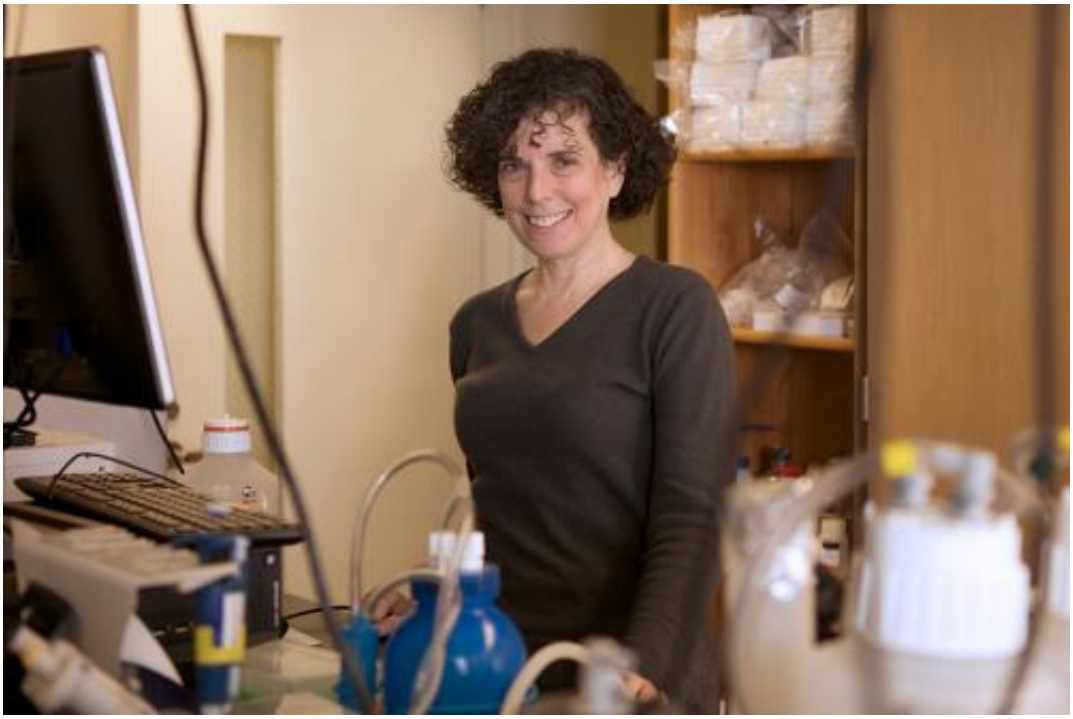

Mady Hornig, MD, professor of Epidemiology at Columbia University's Mailman School of Public Health. Credit: Columbia University's Mailman School of Public Health

Scientists at Columbia University's Mailman School of Public Health have identified a unique pattern of immune molecules in the cerebrospinal fluid of people with myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) that provides insights into the basis for cognitive dysfunction—frequently described by patients as "brain

fog"—as well as new hope for improvements in diagnosis and treatment.

In the study published in *Molecular Psychiatry*, Mady Hornig, MD, and colleagues used immunoassay testing methods to measure the levels of 51 immune biomarkers called cytokines in the cerebrospinal fluid of 32 people with ME/CFS for an average of seven years, 40 with multiple sclerosis, and 19 non-diseased controls. The researchers found that levels of most cytokines, including the inflammatory immune molecule, interleukin 1, were depressed in individuals with ME/CFS compared with the other two groups, matching what was seen in the blood study in patients who had the disease for more than three years. One cytokine—eotaxin—was elevated in the ME/CFS and MS groups, but not in the control group.

"We now know that the same changes to the immune system that we recently reported in the blood of people with ME/CFS with long-standing disease are also present in the central nervous system," says Dr. Hornig, professor of Epidemiology and director of translational research at the Center for Infection and Immunity at the Mailman School. "These immune findings may contribute to symptoms in both the peripheral parts of the body and the brain, from muscle weakness to brain fog."

Implications for Diagnosis and Treatment

"Diagnosis of ME/CFS is now based on clinical criteria. Our findings offer the hope of objective diagnostic tests for disease as well as the potential for therapies that correct the imbalance in cytokine levels seen in people with ME/CFS at different stages of their disease," adds W. Ian Lipkin, MD, John Snow Professor of Epidemiology and director of the Center for Infection and Immunity. There is precedent for use of human monoclonal antibodies that regulate the immune response in a wide range of disorders from rheumatoid arthritis to multiple sclerosis. However, the researchers note, additional work will be needed to assess

the safety and efficacy of this approach.

Provided by Columbia University's Mailman School of Public Health