



Johns Hopkins Lyme Disease Research Center And Clinical Care Program



Spring 2025 Newsletter

10th ANNIVERSARY

May 2025 marks the 10th anniversary of the Lyme Disease Research Center and Clinical Care Program at the Johns Hopkins University School of Medicine. We are the only clinical research center housed within an academic department of medicine in the U.S. that specializes in both acute and chronic Lyme disease. Over the past decade, we have built a distinguished multidisciplinary Lyme disease clinical research program, making significant strides in advancing scientific knowledge and enhancing patient care.

A Decade of Milestones:

- Designed and expanded the longitudinal SLICE studies to advance scientific understanding of acute and chronic Lyme disease
- Established a rigorous, well-characterized biorepository of over 104,000 blood and tissue samples
- Fostered 44 external research collaborations
- Published 78 peer-reviewed research studies including objective evidence for the biologic basis of chronic symptoms of Lyme disease
- Identified immune dysfunction and biomarkers
- Developed AI rash recognition tools
- Discovered changes in brain function and structure using functional MRI (fMRI), DTI, and PET brain imaging
- Pioneered Lyme disease joint ultrasound imaging
- Identified Lyme-associated autoantibodies
- Received initial NIH and DoD funding, building on results from philanthropically supported innovative studies
- Established an endowed professorship
- Expanded our multidisciplinary patient care to encompass Johns Hopkins cross-functional expertise in disciplines such as dysautonomia and neuropsychology
- Started the first Lyme disease fellowship program in a department of medicine in the U.S.



2024 IMPACT REPORT

Our 2024 [IMPACT REPORT](#) highlights some of the Center's newest research findings and enhancements to our multidisciplinary approach to patient care.

2024 Highlights

- Expanded multidisciplinary patient care for complex chronic Lyme disease patients
 - ◊ Neuropsychology and POTS/Dysautonomia specialties added
- Published novel research findings
 - ◊ Aberrant immune responses and autoantibodies linked to Lyme-associated arthritis
 - ◊ Significant illness invalidation by medical professionals quantified, indicating need for improved physician education
 - ◊ Emerging geographic hotspots for Lyme disease identified

RESEARCH

Research Substantiates Lyme Disease is Not a Psychosomatic Disease! It is Real and Has an Identifiable Biologic Basis

Several published peer-reviewed studies by Center Director, John Aucott, MD, and team are providing a growing body of evidence that persistent symptoms of Lyme disease are biologically driven and not psychosomatic. One [study](#) shows that 14% of patients treated early for acute Lyme disease still go on to have chronic symptoms called post-treatment Lyme disease. This study validates that Lyme disease can trigger persistent symptoms, such as severe fatigue, body pain and cognitive challenges, despite early treatment with standard of care antibiotics. While new depression and anxiety occur in chronic Lyme disease, research suggests that it is often the result of chronic Lyme disease but not the original cause. Studies conducted by Cherie Marvel, PhD, using advanced brain imaging, provide objective evidence of brain changes in Lyme disease patients and show that Lyme disease associated [brain fog is real](#). Brit Adler, MD, works with Lyme patients suffering with

OUR MISSION

is to bridge the gaps in Lyme disease knowledge and translate our research findings into improved patient care.

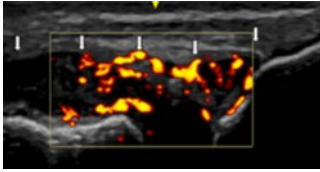


**Lyme Disease Research Center
And Clinical Care Program**
A Multidisciplinary Approach

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[dysautonomia and POTS](#) to identify autonomic nervous system dysfunction that previously was unrecognized.

John Miller, MD, has [published evidence](#) that some people with persistent pain after acute Lyme



disease can have ongoing joint inflammation, which may be subtle and may not be discoverable on exam, but can be detected by musculoskeletal ultrasound.

Our multidisciplinary clinical research team continues to uncover evidence that Lyme disease is not a psychosomatic illness. It all starts with LISTENING TO OUR PATIENTS.

Who's at Risk for Neurological Lyme Disease?

[Novel research](#) at our Center, led by Cherie Marvel, PhD, Associate Professor of Neurology, is revealing significant insights into unexpected [white matter changes](#) in patients with chronic symptoms and post-treatment Lyme disease (PTLD). Brain changes

during patients' attempts to perform cognitive tasks were captured using functional MRI (fMRI) brain imaging. Findings suggest that a strong early brain response to acute Lyme disease may help mitigate long-term damage and result in more favorable health outcomes.

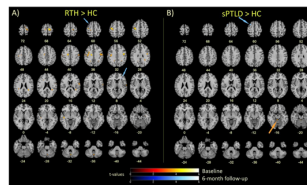
Key Findings

White Matter Changes:

Unexpectedly, the brain changes were most prominent in the white matter which is responsible for connecting the different areas of the brain. This may help explain the slowness of processing speed that is commonly reported in patients experiencing "brain fog".

Compensation by the Brain:

Early, robust white matter activity was associated with healthy outcomes six months after initial infection. The degree of white matter activation could be indicative of the brain trying to heal and adapt to the brain dysfunction caused by Lyme disease



Potential Role of Astrocytes:

The unusual findings of white matter activation suggest a role for astrocyte cells in response to Lyme disease infection. Astrocytes are important non-neuronal cells that support the neural "wiring" connections between neurons and ensure smooth brain functioning. Astrocytes may be important players in both the disruption and recovery from "brain fog," a common symptom of Lyme disease that affects memory and mental clarity.

Biomarker Discovery:

These findings provide objective evidence of neurologic dysfunction in post-treatment Lyme disease (PTLD) and provide novel directions for new diagnostic tools and treatments aimed at improving brain health in Lyme disease patients. Associated blood-based biomarkers could help doctors identify earlier who is at greater risk for PTLD.

In current studies, Dr. Marvel is tracking these brain changes longitudinally with the aim of identifying biomarkers so that high risk neuro-Lyme disease patients can be treated more aggressively early on to avoid developing chronic debilitating illness.

JOIN US: WEDNESDAY, MAY 6, 2025, 7-9 PM

A DECADE OF PROGRESS IN LYME DISEASE RESEARCH AND CLINICAL CARE

LIVESTREAM WEBINAR by John Aucott, MD

Barbara Townsend Cromwell Professor in Lyme Disease and Tickborne Illness; Director, Lyme Disease Research Center; Associate Professor of Medicine, Division of Rheumatology, Johns Hopkins University School of Medicine



Sponsored by the Lyme Care Resource Center

SUPPORT THE CENTER

As we mark our 1st decade of discovery, we are grateful for your support. Together we are bringing hope to the Lyme disease community.



THE CENTER IS GRATEFUL for the support of the Steven & Alexandra Cohen Foundation, Barbara Townsend Cromwell, the Brennan Family, Ashraf Habibi, Afsaneh & Michael Beschloss, Deven Parekh for P-Squared Philanthropies, Global Lyme Alliance, Bay Area Lyme Foundation, The Lyme Care Resource Center, NIH, DoD, our Board, and other donors.

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RECOVERING FROM LYME DISEASE can be immensely challenging.

If you are in distress or have suicidal thoughts:

- Call 988, the Suicide & Crisis Lifeline. Available 24 hours/day
- Text HELP to Crisis Text Line at 741-741. Available 24 hours/day
- Visit 988lifeline.org for more resources

May is Lyme Disease Awareness Month

To stay abreast of the latest in Lyme Disease, subscribe at HopkinsLyme.org/subscribe

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