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2018 ANNUAL REPORT

A CATALYST
FOR CHANGE



“ MY WIFE HAS BEEN STRUGGLING WITH CHRONIC LYME FOR THE PAST TWO YEARS AND IS JUST STARTING TO FEEL BETTER. THANK YOU FOR YOUR EFFORTS TO BRING MORE AWARENESS TO THIS DISEASE AND FUND THE RESEARCH THAT IS SO DESPERATELY NEEDED.

— Brandon N., Arizona ”

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INSIGHT

—

A LETTER FROM OUR CEO & CHAIRMAN

DEAR FRIENDS:

GLOBAL LYME ALLIANCE (GLA) REMAINS DEDICATED TO CONQUERING LYME DISEASE THROUGH A THREE-TIERED APPROACH OF RESEARCH, EDUCATION AND AWARENESS. IN 2018 WE MADE GREAT STRIDES ON OUR CRUSADE TO FIND ANSWERS FOR THE HUNDREDS OF THOUSANDS OF PEOPLE SUFFERING FROM TICK-BORNE ILLNESSES. FROM IDENTIFYING NEW TREATMENT OPTIONS TO EDUCATING THE COMMUNITY AT LARGE, GLA CONTINUES TO BE A CATALYST FOR CHANGE.

In June we announced a significant milestone when GLA surpassed the \$10 million mark in Lyme disease research grant funding to date. To mark this achievement, we issued the “Lyme Disease Research Report: Looking Back, Moving Forward,” the first such report published by any Lyme organization. In 2018 alone, moreover, we awarded close to \$2 million in grants to 15 researchers at leading national academic and medical institutions.

Specific advances from our GLA-funded researchers include: substantive progress in the development of improved diagnostic tools and more effective treatment options using promising new approaches. They have tested promising new drug combinations which successfully attack “persister” cells which evade conventional antibiotics, as well as antibiotic-tolerant Lyme bacteria.

As our knowledge of the complex nature of the Lyme bacterium deepens, cases of Lyme and other tick-borne diseases continue to escalate at a rapid pace. This year alone there will be 427,000 new cases of Lyme disease, not counting co-infections.

We believe we are at a watershed moment in which research data and technology are converging in ways that will accelerate substantive change. To this end, we continue to foster new partnerships and collaborations, to bridge the gap between research discoveries and their translation into marketable products, a process ensuring that life-changing discoveries reach the public in a practical and useful form.

Concurrently, we are working to increase Lyme and tick-borne disease awareness across the nation and the globe. Without accurate diagnostics and proven treatment options, tick bite prevention is key. In 2018 GLA launched educational initiatives and awareness campaigns which targeted physicians, teachers, summer campers, and the general public. Our new Lyme Education Ambassador Program, for example, trained volunteers in communities across the country to raise public awareness and teach others how to prevent tick-borne illnesses.

In addition, in 2018 we diversified our Board of Directors with several high-profile individuals—global superstar and philanthropist Avril Lavigne, among them— as a means of strengthening outreach efforts and growing fundraising to meet the ever-increasing demand for research dollars

Looking back at 2018 we are encouraged by the progress we have made. Our insight, innovation, and impact would not have been possible without our team, our partners, and supporters like you. We are grateful to have you at our side as we continue our mission to conquer Lyme disease and make a difference in the lives of those suffering from Lyme and other tick-borne diseases, and in all who are at risk.



Scott Santarella
CEO
Global Lyme Alliance



Robert Kobre
Chairman of the Board
Global Lyme Alliance

YEAR AT A GLANCE

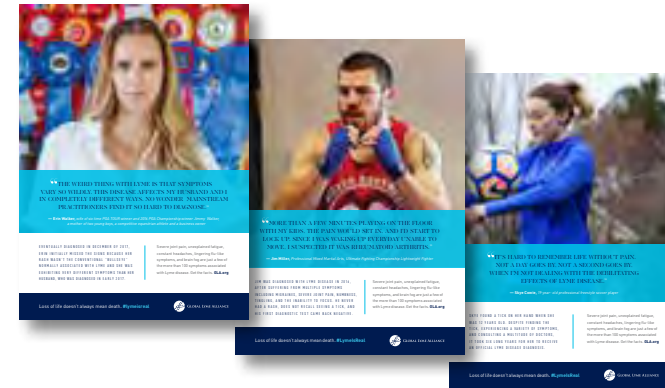
2018: YEAR AT A GLANCE

FEB

Study funded by GLA at Johns Hopkins University shows evidence that post treatment Lyme disease syndrome (PTLDS) is a real disorder with real symptoms.

— GLA-funded investigator Brian Fallon, M.D. of Columbia University publishes a study linking Lyme disease and mental disorders, particularly depression and suicide.

— GLA becomes first Lyme disease organization to be named an official charity partner of the 2018 TCS New York City Marathon



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APR

GLA unveiled its new Public Service Announcement ad campaign featuring Erin Walker, Jim Miller and Skye Cowie



MAY

GLA hosts 8th annual Lyme Disease Research Symposium for its Scientific Advisory Board and funded grantees to share their research findings and forge collaborations.

— GLA and partner Ivy Oaks Analytics announce they protected more than 100 summer camps through its Be Tick AWARE tick bite prevention program, protecting more than 100,000 campers, counselors and family members.

— University of California-Davis' Nicole Baumgarth, D.V.M., Ph.D. is honored at Greenwich Gala for making significant strides in research and treatment in pursuit of a cure for Lyme disease. Singer-songwriter Jesse Ruben also honored for his ongoing efforts to raise awareness of the Lyme threat.

— Annual Lyme disease case number hits new high of 427,000 in U.S., per new Centers for Disease Prevention and Control (CDC) reporting. In addition, combined tick, flea and mosquito-borne diseases have tripled in the last 13 years.

— Stacy Velarde joins GLA as first Director of Development. *(at left)*

— Launched "A Warrior's Best Weapon" campaign with Ally Hilfiger.

JUN

GLA announces it has surpassed the \$10 million mark in Lyme disease research funding.

— Norma Russo, GLA Board member, honored by Paraguay's Chamber of Senators for her humanitarian work fighting Lyme disease.

— GLA publishes inaugural Lyme Disease Research Report, a first for any Lyme organization.



JUL

Six new members are appointed to Scientific Advisory Board: Armin Alaedini, Ph.D., John Belisle, Ph.D.; Linden T. Hu, M.D.; Adriana Marques, M.D.; Susan Swedo, M.D., and R. Mark Wooten, Ph.D.



AUG

GLA-funded researcher Kim Lewis, Ph.D., out of Northeastern University, publishes findings identifying Vancomycin as an effective antibiotic for Lyme.

— GLA launches new national Lyme Education Ambassador Program (LEAP) to help raise awareness for tick bite prevention and Lyme disease.



SEP

GLA participates in the Cantor Fitzgerald Charity Day. Rosanna Scotto, co-host of "Good Day New York," serves as GLA's celebrity ambassador at the event.

OCT

Global superstar & philanthropist Avril Lavigne joins GLA's Board of Directors, which coincides with a partnership announcement between The Avril Lavigne Foundation and GLA.

— GLA-funded investigator Ying Zhang, M.D., Ph.D. publishes important new findings on the effectiveness of 10 essential oils to treat stationary and persister forms of *Borrelia burgdorferi*.

— Findings from GLA-funded meeting are published, publicly addressing the limitations of current two-tiered testing and the need for better diagnostic testing.

— GLA's 4th Annual NYC Gala with Erin Walker and Ramona Singer serving as the evening's honored guests, raises almost \$2 million.



NOV

For the first time, GLA is a charity partner of the TCS New York City Marathon, with five Team GLA runners competing in the 26.2 mile race.

— GLA announces partnership with Manus Bio to develop nontoxic, environmentally friendly acaricide that kills ticks.

— The federal Tick-Borne Disease Working Group issues its first report to Congress, confirming there is a "serious and growing threat" of tick-borne diseases throughout the nation.

DEC

GLA-funded research by Columbia University's Armin Alaedini, Ph.D. demonstrates that patients with advanced Lyme disease can be distinguished from those who are in the disease's earliest stages.

— GLA partners with Alex Hudson Lyme Foundation to help advance research into Mast Cell Activation Syndrome.

— Launched "Lyme is Real" awareness and fundraising campaign.

GLA LEADERSHIP

“ I AM HONORED TO BE PART OF THIS AMAZING TEAM. GLA’S LEADERSHIP AND FOCUS ON RESEARCH IS CRUCIAL TO DRIVE REAL CHANGE IN HOW LYME DISEASE IS UNDERSTOOD AND TO IMPROVE THE LIVES OF PATIENTS WORLDWIDE.

— Avril Lavigne



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GLA LEADERSHIP

GLOBAL LYME ALLIANCE ADDED SIX NEW MEMBERS TO ITS BOARD OF DIRECTORS IN 2018, INCLUDING GLOBAL SUPERSTAR AND PHILANTHROPIST AVRIL LAVIGNE AND EQUESTRIAN ERIN WALKER, WIFE OF PGA CHAMPION JIMMY WALKER. ALL HAVE A PERSONAL DRIVE TO CONQUER LYME DISEASE AND EACH BRINGS A UNIQUE SKILLSET TO GLA’S HANDS-ON BOARD. THEY ALSO RAISE VITAL FUNDS, ATTEND AND SUPPORT GLA EVENTS, ACT AS AMBASSADORS TO INTRODUCE THE ORGANIZATION AND THE CAUSE TO INDIVIDUALS, COMPANIES AND INDUSTRIES, AND HELP GUIDE THE ORGANIZATION AS IT SEEKS A CURE FOR LYME AND OTHER TICK-BORNE DISEASES.

Scott Santarella, CEO

Robert Kobre, Chairman of the Board

BOARD OF DIRECTORS

Charles Balducci, Vice Chair	Ridgway Barker*	Dana McAvity
Diane Blanchard, Vice Chair	Chris Corrinet	Karma Newberry-Mortensen*
Staci Grodin, Vice Chair	Nancy Del Genio*	David Nolan
Debbie Siciliano, Vice Chair	David Gerstner	Peter Norley
Henry Dosch, Treasurer	Julia Knox-Comeau	Norma Russo
Brett Kristoff	Avril Lavigne*	Alexander Tisch
Lorrie Nadel	Steve Lefkowitz*	Janet Vaccaro, Secretary
Ed O’Connell	Lew Leone	Erin Walker*
Karen Peetz	Janice Lipton	
Paul Ross	Steve Martin	

*New in 2018

SCIENTIFIC ADVISORY BOARD

THE GOAL OF GLA’S PRESTIGIOUS SCIENTIFIC ADVISORY BOARD (SAB) IS TO PROVIDE STRATEGIC GUIDANCE FOR OUR RESEARCH AND SCIENTIFIC PROGRAMS JUDGED TO HAVE THE BEST PROSPECTS OF DELIVERING MEASURABLE RESULTS AND SIGNIFICANT, MARKETABLE ADVANCES. TO CARRY THAT OUT, THE SAB IS COMPRISED OF WORLD-RENOWNED RESEARCHERS AND CLINICAL INNOVATORS IN THE FIELD OF LYME AND OTHER TICK-BORNE DISEASES.

Through a rigorous peer-review process, modeled after the National Institutes of Health, SAB members review the grant applications received to determine which projects best fulfill our mission to improve diagnostic testing, uncover more effective treatment protocols and ensure we are funding the most promising research. GLA is the only Lyme 501(c)(3) to follow these stringent guidelines with two in-house Ph.D.s at the helm.

The SAB comprises 16 members who generously give their time and expertise each year to ensure GLA remains in the vanguard of scientific research. The SAB meets in-person each year at GLA’s Lyme Disease Research Symposium.

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“GLA’S SAB IS IMPORTANT BECAUSE THE ORGANIZATION INVESTS HEAVILY IN RESEARCH. ITS PEER REVIEW—WITH THE SCIENCE EVALUATED BY OTHER SCIENTISTS—LEGITIMIZES THE SCIENCE. THAT’S IMPORTANT BECAUSE ONLY GOOD SCIENCE WILL HELP US CRACK THE CODE OF THIS DISEASE.”

— Mark Soloski, Ph.D.

- Timothy J. Sellati, Ph.D.**
Chief Scientific Officer
GLA
- Mayla Hsu, Ph.D.**
Director of Research & Science
GLA
- Armin Alaedini, Ph.D.**
Assistant Professor of Medicine
Columbia University Medical Center
- John Belisle, Ph.D.**
Professor Department of Microbiology, Immunology and Pathology
Colorado State University
- Catherine A. Brissette, Ph.D.**
Associate Professor of Biomedical Sciences
University of North Dakota School of Medicine and Health Sciences
- Charles Chiu, M.D., Ph.D.**
Associate Professor of Laboratory Medicine and Medicine
University of California, San Francisco
- Allison K. DeLong, M.S.**
Biostatistician, Center for Statistical Studies
Brown University
- Richard Goldstein, D.V.M.**
Executive Director and Chief Medical Officer of Diagnostics
Zoetis, Inc.
- Linden T. Hu, M.D.**
Vice Dean of Research and Professor of Molecular Biology and Microbiology
Tufts University School of Medicine
- Andreas Kogelnik, M.D., Ph.D.**
Founder and Director
Open Mind Institute
- Richard T. Marconi, Ph.D.**
Professor, School of Medicine
Virginia Commonwealth University
- Adriana Marques, M.D.**
Chief of a Clinical Studies Unit within the National Institute of Allergy and Infectious Diseases
National Institutes of Health
- Scott J. Mellis, M.D., Ph.D.**
Vice President, Early Clinical Development and Experimental Sciences, Rare Diseases
Regeneron Pharmaceuticals Inc.
- Richard S. Ostfeld, Ph.D.**
Senior Scientist and Disease Ecologist
Cary Institute of Ecosystem Studies
- Utpal Pal, Ph.D.**
Professor, Department of Veterinary Medicine and Director of the Veterinary Medical Sciences Graduate Program
University of Maryland

- Mark J. Soloski, Ph.D.**
Professor of Medicine, Pathology, Molecular Biology & Genetics and Molecular Microbiology and Immunology
Johns Hopkins University School of Medicine
- Susan Swedo, M.D.**
Chief of the Pediatrics and Developmental Neuroscience Branch
National Institute of Mental Health
- R. Mark Wooten, Ph.D.**
Department of Microbiology and Immunology
University of Toledo College of Medicine
- FINANCIAL REVIEW COMMITTEE**
- Robert Kobre, C.P.A., M.B.A.**
GLA Chairman and Vice Chairman
Investment Banking at Credit Suisse
- Scott Santarella**
CEO
GLA
- Brian Scanlan**
President
Mount Hope Capital



INNOVATION

RESEARCH THAT DELIVERS

GLA’S CHIEF SCIENTIFIC OFFICER, TIM SELLATI, PH.D. AND ITS DIRECTOR OF RESEARCH & SCIENCE, MAYLA HSU, PH.D., IDENTIFIED SEVEN KEY RESEARCH EVENTS IMPACTING THE LYME COMMUNITY IN 2018—AND THE WAYS THAT GLA WAS INVOLVED.

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1. CONNECTION BETWEEN LYME DISEASE AND DEPRESSION

GLA-funded investigator, Brian Fallon M.D., of Columbia University, published a study in the journal *Psychosomatics* linking Lyme disease and mental disorders, particularly depression and suicide. According to the study, depression has been reported in 8 to 45% of patients with post-treatment Lyme disease syndrome (PTLDS), but little was known about suicidal ideation in these patients. This seminal study highlighted the fact that one in five patients with PTLDS reported suicidal thoughts and the importance of screening for depression and suicidality to optimize patient care.

2. ESSENTIAL OILS SHOW PROMISE AS EFFECTIVE TREATMENT FOR LYME

Ying Zhang, M.D., Ph.D. of Johns Hopkins Bloomberg School of Public Health, published findings on the effectiveness of certain essential oils (EOs) to kill *Borrelia burgdorferi*. The study identified 10 EOs that have strong activity against stationary phase *B. burgdorferi* at a low concentration, and it further found that of the 10, garlic, allspice, and thyme showed strong killing activity against persisters. Studies have now advanced to the stage of testing the therapeutic effects of essential oils in *B. burgdorferi*-infected animal models.

3. “NEW” ANTIBIOTICS IDENTIFIED

GLA Grantee Kim Lewis, Ph.D. of Northeastern University identified Vancomycin as an effective antibiotic against *B. burgdorferi*. Dr. Lewis’ team found that Vancomycin proved more effective in killing the pathogen in vitro than Ceftriaxone. Examination of the action of antibiotics in severe combined immune deficient mice showed that Doxycycline, a standard of care for uncomplicated acute infection, did not clear the pathogen. By contrast, both Ceftriaxone and Vancomycin cleared the infection.

4. BETTER UNDERSTANDING OF LYME PERSISTERS AND CHRONIC LYME DISEASE

GLA-funded investigator John Aucott, M.D. and colleagues at Johns Hopkins University School of Medicine published results concluding that PTLDS is a real disorder with real symptoms that persist over long periods of time for some people. In a well-defined study of 61 patients who had been treated for Lyme disease, researchers found that some individuals can suffer from severe residual symptoms even after treatment, despite the absence of clinically detectable infection. Dr. Aucott and his group are continuing to study patients to search for biomarkers that were not examined in their initial study.

5. PATHWAY OPENED FOR BETTER LYME DISEASE DIAGNOSIS

Inaccurate diagnostic testing is a major challenge for patients and physicians alike. Thanks to a report generated by a meeting of Lyme disease experts, including scientists from the FDA, NIH and the CDC, the pathways for developing superior diagnostic tests are clear. The meeting, underwritten by GLA, resulted in two articles published in a journal of the Infectious Diseases Society of America. The articles outlined the need for better tests and described newer approaches in direct detection that show promise.

6. IMPROVED IDENTIFICATION OF PTLDS SUFFERERS

An important series of GLA-funded studies by Armin Alaedini, Ph.D., at Columbia University, showed that Lyme patients with advanced disease can be distinguished from those with earlier disease stages. These studies were critical, because instead of simply comparing Lyme patients with healthy controls, as is typical in many studies of Lyme disease, the research compared Lyme patients in various stages of disease with each other, and with healthy people. This approach allowed a more precise characterization of patients.

7. RECORD INCREASE IN CASES OF LYME AND VECTOR-BORNE DISEASES IN THE U.S.

The annual number of Lyme disease cases has reached ~427,000, up from ~329,000. In addition, the CDC announced that the combined case number of tick, flea, and mosquito-borne diseases have tripled in the last 13 years. The CDC also reports the fact that an ever-expanding diversity of vector-borne pathogens are being discovered through continued research efforts. The findings underscored the vital need for GLA to remain at the forefront of discovery and innovation, and a catalyst for change throughout the Lyme disease world.

FOSTERING SCIENTIFIC COLLABORATIONS

TO KEEP MOVING FORWARD AND OPENING NEW RESEARCH DOORS, GLA HOLDS AN ANNUAL LYME DISEASE RESEARCH SYMPOSIUM THAT BRINGS TOGETHER RENOWNED LYME AND OTHER TICK-BORNE DISEASE SCIENTISTS TO PRESENT THEIR WORK, SHARE IDEAS AND INITIATE COLLABORATIONS FOR FUTURE INNOVATION.

Moreover, throughout 2018 GLA's two on-staff Ph.D.s visited research labs and participated in important conferences, including the Gordon Research Conference on the Biology of Spirochetes in Ventura, California; the International Conference on Lyme Borreliosis and Tick-Borne Diseases in Atlanta, Georgia; the Midcoast Lyme Disease Support & Education Conference in Augusta, Maine; the Lyme Disease in the Era of Precision Medicine Conference and the Lyme Disease Association/ Columbia Conference, both in New York; and the U.S. Department of Health and Human Service's Lyme Innovation Roundtable in Washington D.C.



Dr. Timothy Sellati, GLA, Dr. Lise Nigrovic, Dr. Edouard Vannier, Dr. Klemen Strle, Dr. Anthony D'Onofrio, Dr. Mayla Hsu, GLA — at GLA Lyme Disease Research Symposium 2018



GLA'S SAB PLAYS A CRITICAL ROLE IN HELPING RESEARCHERS GET SEED FUNDING. THIS ALLOWS THEM A MECHANISM WHERE THEY CAN BE MORE INNOVATIVE AND WORK ON IDEAS THAT MIGHT NOT OTHERWISE FIT STRICT GOVERNMENT FUNDING CRITERIA FOR INCLUSION.



— John Belisle, Ph.D.

A GLA SUCCESS STORY



Dr. Nicole Baumgarth accepting award at GLA Greenwich Gala 2018

A VITAL COMPONENT OF GLA'S RESEARCH INITIATIVES INCLUDES EARLY-STAGE FUNDING TO ASSIST SCIENTISTS AT A CRITICAL STAGE IN THEIR RESEARCH.

For the past three years, Nicole Baumgarth, D.V.M., Ph.D.—Professor of Immunology at the Department of Pathology, Microbiology & Immunology and the Center for Comparative Medicine, University of California, Davis—has received funding from GLA for research into the regulation of immunity to *Borrelia burgdorferi* infection in mice. Specifically, Dr. Baumgarth was able to make progress in the analysis of T-cell responses to *B. burgdorferi*. At the same time, she generated additional samples and data from the studies that allowed her to investigate new avenues of research into the quality of antibodies generated.

The preliminary data generated from GLA funding were instrumental in developing a new line of investigation into antibody-mediated immunity induced in response to *B. burgdorferi* infection. This finding led to Dr. Baumgarth being awarded a three-year, \$1.1 million grant from the Department of Defense. Commenting on the award, Dr. Baumgarth acknowledged GLA's role in helping advance her research. "The funding received from GLA over the last three years," she said, "was critical for us to continue to conduct experiments."

At our Greenwich Gala in May, Dr. Baumgarth received GLA's Lauren F. Brooks Hope Award for being among the first to document immunologic failures on multiple levels in Lyme disease. In accepting the award, she said: "We are all here to no longer have to be here...to find a cure and, even better, to find a mechanism to prevent this disease so none of us have to think about how this horrible disease is affecting our loved ones."

Dr. Baumgarth published her findings in 2017 in *Frontiers in Immunology*, "*Borrelia burgdorferi* Manipulates Innate and Adaptive Immunity to Establish Persistence in Rodent Reservoir Hosts".



Scott Santarella, GLA, Dr. Nicole Baumgarth, Jesse Ruben

PUBLISHED RESEARCH

IN 2018, GLOBAL LYME ALLIANCE-FUNDED RESEARCH SCIENTISTS MADE PROGRESS ON A NUMBER OF FRONTS, ESPECIALLY IN DIAGNOSTICS AND POTENTIALLY TRANSFORMATIVE THERAPIES. THESE PUBLISHED STUDIES CONFIRM THE IMPACT OF GLA'S RESEARCH SELECTION PROCESS, IN IDENTIFYING AND FUNDING THE MOST PROMISING PROJECTS THAT YIELD IMPACT. HERE ARE SOME GLA-FUNDED STUDIES PUBLISHED BY OUR DEDICATED GRANTEEES THIS YEAR:

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Jie Feng, Wanliang Shi, Judith Miklossy, Genevieve M. Tauxe, Conor J. McMeniman, and Ying Zhang. (2018) Identification of Essential Oils with Strong Activity against Stationary Phase *Borrelia burgdorferi*. *Antibiotics* 2018, 7(4), 89

Besold AN, Culbertson EM, Nam L, Hobbs RP, Boyko A, Maxwell CN, Chazin WJ, Marques AR, Culotta VC. (2018) Antimicrobial action of calprotectin that does not involve metal withholding. *Metallomics* doi: 10.1039/c8mt00133b

Wu X, Sharma B, Niles S, O'Connor K, Schilling R, Matluck N, D'Onofrio A, Hu LT, Lewis K. (2018) Identifying vancomycin as an effective antibiotic for killing *Borrelia burgdorferi*. *Antimicrob Agents Chemother*. Aug 20. Doi: 10.1128/AAC.01201-18

Divan A, Casselli T, Narayanan SA, Mukherjee S, Zawieja DC, Watt JA, et al. (2018) *Borrelia burgdorferi* adhere to blood vessels in the dura mater and are associated with increased meningeal T cells during murine disseminated borreliosis *PLoS ONE* 13(5): e0196893

Doshi S, Keilp JG, Strobino B, McElhiney M, Rabkin J, Fallon BA. (2018) Depressive Symptoms and Suicidal Ideation Among Symptomatic Patients With a History of Lyme Disease vs Two Comparison Groups. *Psychosomatics* doi.org/10.1016/j.psych.2018.02.004

Kitsou C, Pal U. (2018) Ixodes immune response against Lyme disease pathogens. *Front Cell Infect Microbiol* 8:176. doi: 10.3389/fcimb.2018.00176

Lin Y-H, Chen Y, Smith TC, Rajasekhar Karna SL, Seshu J. (2018) Short-chain fatty acids alter metabolic and virulence attributes of *Borrelia burgdorferi*. *Infect Immun* 86(9): pii e00217-18. doi: 10.1128/IAI.00217-18

Strobino B, Steinhagen K, Meyer W, Scheper T, Saschenbrecker S, Schlumberger W, Stöcker W, Gaito A, Fallon BA. (2018) A community study of *Borrelia burgdorferi* antibodies among individuals with prior Lyme disease in endemic areas. *Healthcare* 6(2):69. doi:10.3390/healthcare6020069

Uhde M, Indart A, Fallon BA, Wormser GP, Marques AR, Vernon SD, Alaedini A. (2018) C-reactive protein response in patients with post-treatment Lyme disease symptoms versus those with myalgic encephalomyelitis/chronic fatigue syndrome. *Clin Inf Dis*. 67(8):1309–1310. doi: org/10.1093/cid/ciy299

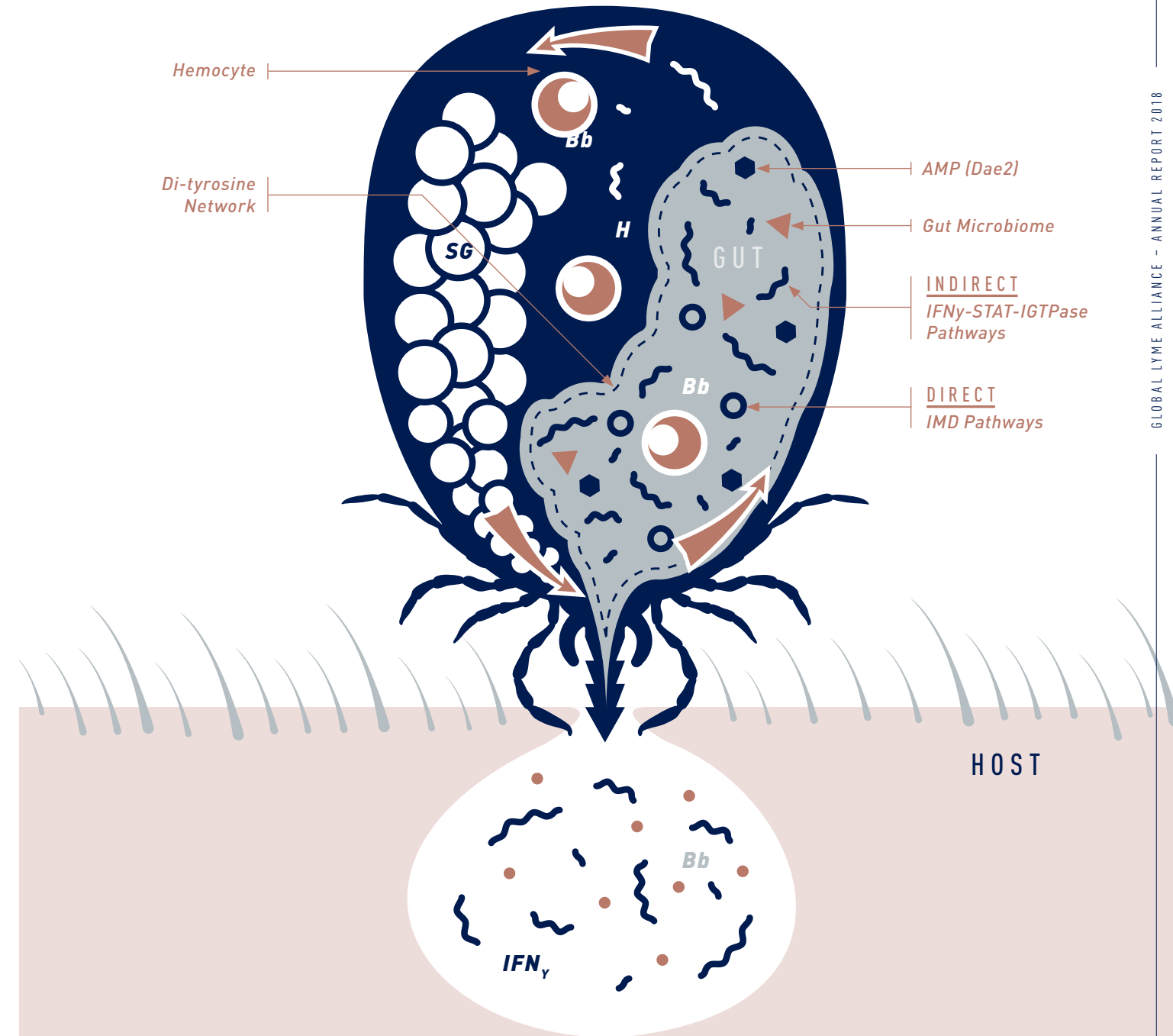


Image from GLA-funded researcher Dr. Utpal Pal's published paper, "Ixodes Immune Responses Against Lyme Disease Pathogens", highlighting examples of Ixodes immune components that impact persistence of Lyme disease agents.

ACCELERATING EDUCATION

A CRITICAL COMPONENT OF GLA’S MISSION IS EDUCATION. GIVEN THE RAPID RISE IN THE NUMBER OF LYME DISEASE CASES AND THE PLETHORA OF MISLEADING INFORMATION, IT’S CRUCIAL FOR GLA TO ENGAGE WITH ALL MEMBERS OF THE COMMUNITY ON TICK-BITE PREVENTION, LYME AND TICK-BORNE DISEASE AWARENESS, AND HOW TO GET HELP IF ONE SUSPECTS THEY MAY HAVE A TICK-BORNE ILLNESS.

In 2018, GLA reached people across the globe with its education message, both in person and online. This is accomplished through our extensive, and ever-expanding, set of initiatives to educate the community and provide much-needed resources and information. Programs include:

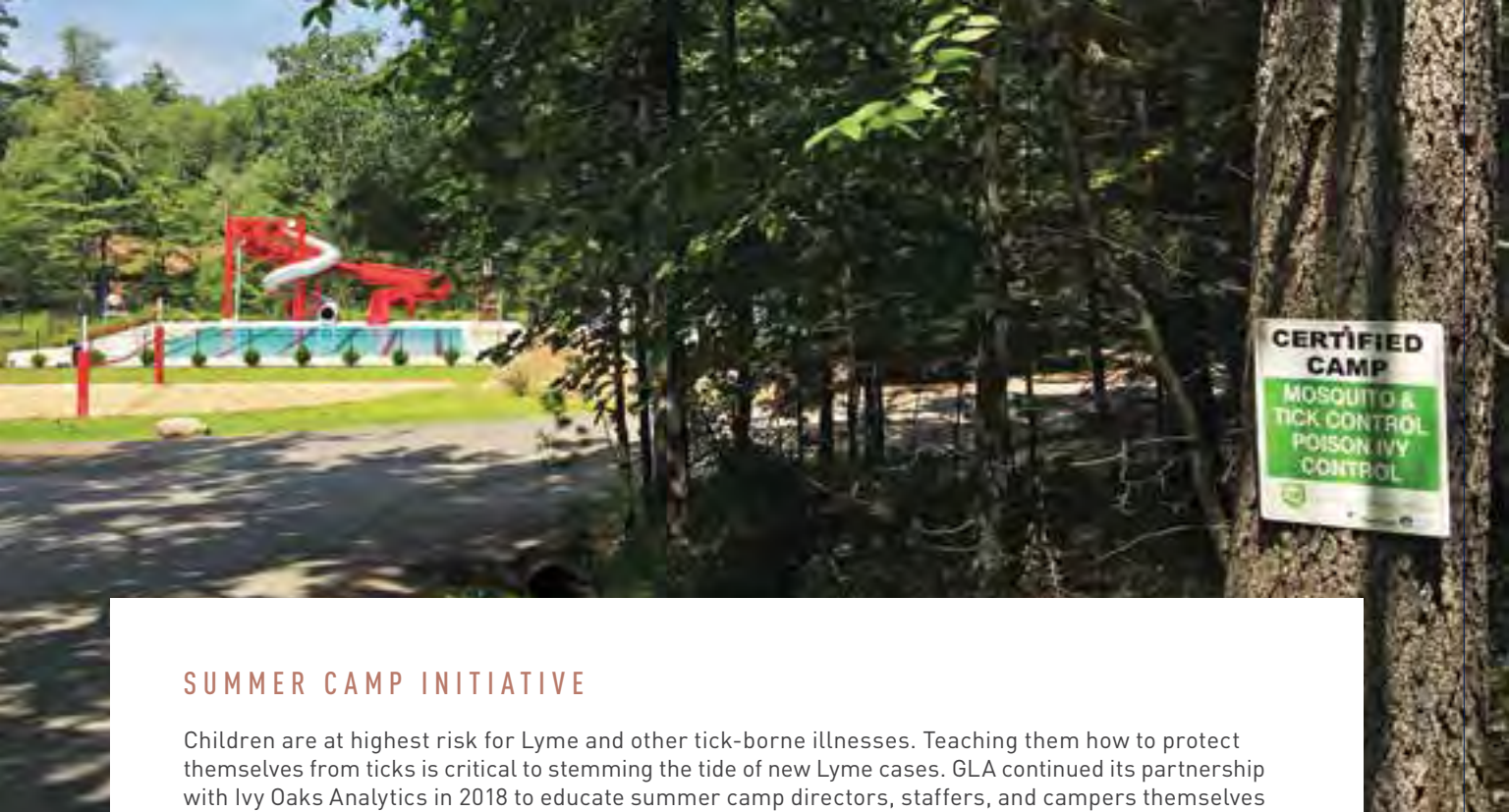
LYME EDUCATION AMBASSADOR PROGRAM (LEAP)

In 2018, GLA launched its Lyme Education Ambassador Program to raise public awareness and teach people how to prevent Lyme and other tick-borne diseases, as well as be aware of disease symptoms. GLA’s team of volunteer Ambassadors undergo formal training which prepares them to present to local organizations, professional associations, civic groups, schools, corporations and others. By the end of the year, 32 individuals from communities across the country had completed their training. The number of Ambassadors is expected to grow in 2019. We are proud that this important education initiative has resulted in subsequent programs by other Lyme-related organizations, following GLA’s leadership role in educating the community.



BE TICK AWARE™ TICK BITE PREVENTION PROGRAM

GLA’s successful Be Tick AWARE tick bite prevention program makes learning and understanding the key elements to successful tick bite prevention easy — from avoiding tick habitats, to using tick repellent, to checking for ticks. The Be Tick AWARE message is an integral part of GLA’s education and outreach messaging and part of an awareness poster featuring PGA Championship winner Jimmy Walker. Be Tick AWARE kits and materials are available to the public.



SUMMER CAMP INITIATIVE

Children are at highest risk for Lyme and other tick-borne illnesses. Teaching them how to protect themselves from ticks is critical to stemming the tide of new Lyme cases. GLA continued its partnership with Ivy Oaks Analytics in 2018 to educate summer camp directors, staffers, and campers themselves about tick dangers. Some 125 camps in 14 states, many known as hotbeds for ticks, received GLA’s Be Tick AWARE prevention kits. Through this program, GLA helped protect more than 100,000 individuals in 2018. The plan will continue to expand in 2019.

SCHOOLS

Thousands of educators throughout the United States accessed GLA’s engaging online, interactive curriculum, “It’s Time to Be Lyme Alert,” specially produced for students in grades K-12. The curriculum teaches students how to identify ticks, learn about tick habitats, and what to do if a tick is found. The online Lyme Alert curriculum complements GLA’s print curriculum program.

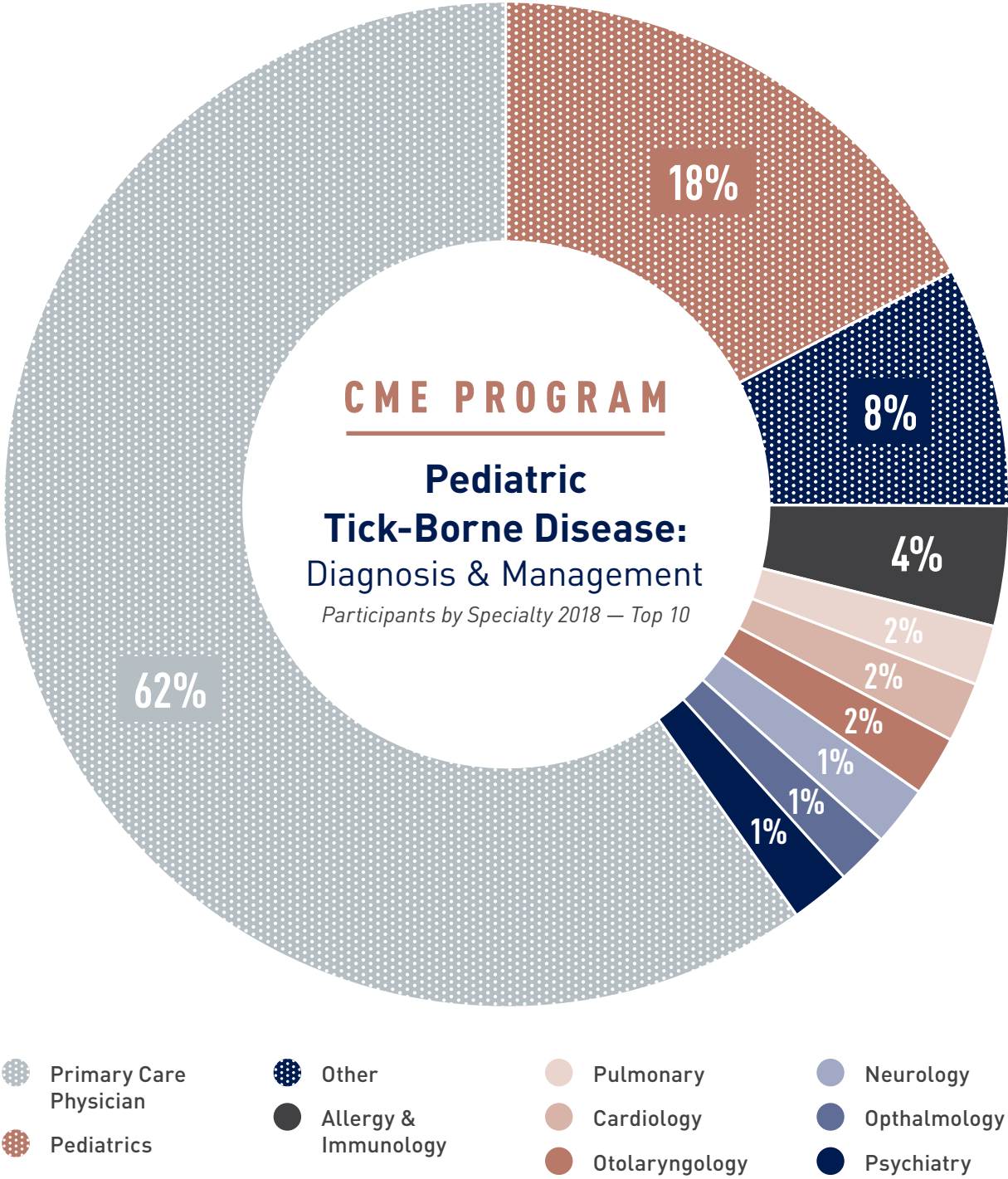
PROFESSIONAL EDUCATION

To educate physicians on how to diagnose and treat Lyme in a timely and effective manner, GLA offered a free Continuing Medical Education (CME)-accredited education program, “Pediatric Tick-Borne Disease: Diagnosis and Management.” To date, more than 10,000 healthcare professionals have participated in the program.

“GLA HAS BEEN SUCH A COMFORT DURING MY OWN TREATMENT. ON THE DARK DAYS, KNOWING I’M NOT ALONE IS SUCH A COMFORT. THANKS FOR ALL YOU DO!”

— Annie P., Washington

PROFESSIONAL EDUCATION



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“EACH DAY I TRUST EVERY DOLLAR DONATED BRINGS US CLOSER TO A HEALING CURE FOR EVERY PERSON WHO IS CHALLENGED WITH THIS DISEASE.”

— Robin G., California

RESEARCH GRANTEES

IN 2018, GLOBAL LYME ALLIANCE AWARDED CLOSE TO \$2 MILLION IN A DIVERSE PORTFOLIO OF SCIENTIFIC RESEARCH GRANTS TO 15 SCIENTISTS AT LEADING ACADEMIC AND MEDICAL INSTITUTIONS ACROSS THE COUNTRY. THE GRANTS WERE AWARDED FOLLOWING A RIGOROUS PEER REVIEW PROCESS BY GLA’S SCIENTIFIC ADVISORY BOARD.

These brilliant scientists are working to find the answers that will ultimately cure Lyme and other tick-borne diseases. They are working on basic science and achieving many advances, including progress in the development of a reliable diagnostic test and identifying potentially new therapeutic drugs. Thanks to their hard work and dedication, they give hope to us all.

Nicole Baumgarth, D.V.M., Ph.D.
University of California-Davis
Dr. Baumgarth, using mouse models for her studies, is exploring the mechanisms underlying successful immune responses to pathogens.
STUDY: “Defining protective antibody-mediated immunity to *Borrelia burgdorferi*”

Catherine Brissette, Ph.D.
University of North Dakota
Dr. Brissette is studying the effect of maternal Lyme disease on the offspring of infected mice, and will determine the timing of transplacental (from mother to fetus) infection. **STUDY:** “Adverse outcomes in gestation as consequences of immune responses to *B. burgdorferi* infection”

Henry Hampton, Ph.D.
Institute for Systems Biology
Dr. Hampton’s work focuses on the gene expression changes in patients at various stages of Lyme disease. **STUDY:** “A longitudinal systems-level dissection of the immune response during Lyme disease”

Kim Lewis, Ph.D.
Northeastern University
Dr. Lewis has found novel drugs that are effective against persister forms of *B. burgdorferi*. He continues his study to identify drugs and combinations of drugs that may be useful for treating Lyme disease more effectively than current therapies. **STUDY:** “Treatment of Lyme disease”

Richard Marconi, Ph.D.
Virginia Commonwealth University Medical Center
Therapeutic vaccines are designed to elicit beneficial immune responses after infection, and may be important new tools in the treatment of Lyme disease. This study will identify critical *B. burgdorferi* targets and design a vaccine to enhance bacterial killing. **STUDY:** “Therapeutic vaccine for Lyme disease”

Lise Nigrovic, M.D., M.P.H.
Boston Children’s Hospital and Harvard Medical School
This study is designed to establish a systematic collection of patient information and samples from six clinical sites, for detection of *B. burgdorferi* and tick-borne co-infections in children living in Lyme-endemic areas.
STUDY: “A pediatric multi-center Lyme disease research network with bio sample collection”

Mark Soloski, Ph.D.
Johns Hopkins University School of Medicine
This study will identify T cell subsets that are active during infection and determine what portions of the bacteria are recognized by them. This may help to explain immune dysfunctions that cause many patients to suffer continued symptoms after initial treatment.
STUDY: “T cell immunity in human Lyme borreliosis”

Klemen Strle, Ph.D.
Harvard Medical School and Massachusetts General Hospital
This study will identify specific genes whose polymorphisms may promote immune dysfunction and more severe acute and post treatment disease.
STUDY: “Host genetic factors in the pathogenesis of Lyme disease and its post-Lyme syndrome”

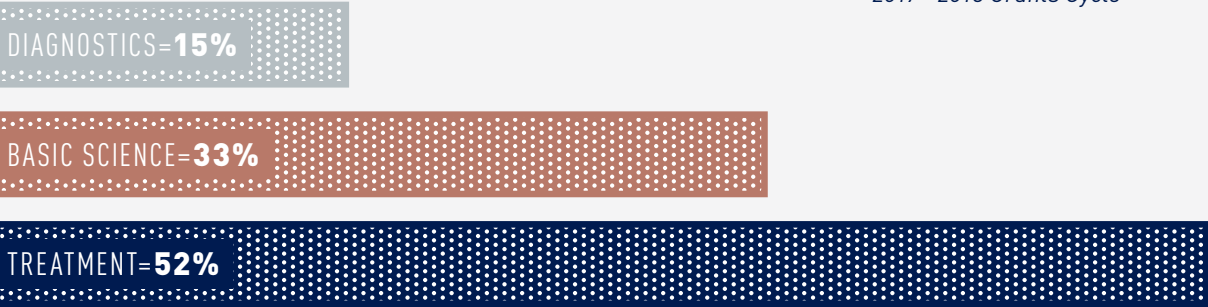
Edouard Vannier, Ph.D.
Tufts University
Babesia is a tick-borne pathogen that often co-infects along with Lyme. Dr. Vannier’s study centers on neutralizing antibodies that may promote clearance of the parasite from infected mice. **STUDY:** “The design of an antibody-based therapy for severe babesiosis”

Ying Zhang, M.D., Ph.D.
Johns Hopkins Bloomberg School of Public Health
Dr. Zhang has found antigens expressed on *B. burgdorferi* that are specific for the persister form. He will now determine whether antibodies that recognize persister bacteria exist in patients with post-treatment lyme disease syndrome. This could lead to a diagnostic test for dormant Lyme bacteria.
STUDY: “High activity of selective essential oils against *Borrelia* persisters

Postdoctoral Blackman Fellows:
George Aranjuez, Ph.D., *University of Central Florida*
Ashley Groshong, Ph.D., *University of Connecticut*
Chrysoula Kitsou, Ph.D., *University of Maryland*
Matthew Muramatsu, Ph.D., *University of Texas-Southwestern*
Bijaya Sharma, Ph.D., *Tufts University*

FUNDING BY TYPE

2017–2018 Grants Cycle





IMPACT

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COAST-TO-COAST OUTREACH AND IMPACT

**ENDURANCE
EVENT** *(Location)*

Brooklyn, NY
Buffalo, NY
Greenwich, CT
Long Island, NY *(9)*
Los Angeles, CA
Nashville, TN
New York, NY *(7)*
Philadelphia, PA *(4)*
Raleigh, NC
Santa Cruz, CA
Squaw Valley, CA
Tampa, FL
Tanzania, Africa
Washington, D.C. *(3)*

**ENDURANCE
EVENT**
(Participation Home)

Alexandria, VA
Brooklyn, NY *(2)*
Burbank, CA
Canton, NY
Columbia, MD
Douglas, MA
Eugene, OR
Falls Church, VA
Glenmoore, PA
Golden, CO

Greenwich, CT *(4)*
Guttenberg, NJ
Harrison, NY
Lafayette, NJ
Lansdale, PA
Lincoln, MA
London, England
Los Alamitos, CA
New York, NY *(4)*
Ocala, FL
Oyster Bay, NY
Peekskill, NY
Providence, RI
Raleigh, NC
Reading, MA
West Chester, PA

**FUNDRAISING
EVENTS**

New York, NY
Albany, NY
Buffalo, NY
Chicago, IL
Colts Neck, NJ
Greenwich, CT
Hamptons, NY
Oregon
Purchase, NY
Palm Beach, FL

RESEARCHERS

Baltimore, MD
Boston, MA
Cambridge, MA
Chicago, IL
College Park, MD
College Station, TX
Colorado Springs, CO
Dallas, TX
Davis, CA
Durham, NC
Grand Forks, ND
Irvine, CA
Ithaca, NY
Medford, MA
Millbrook, NY
Newark, NJ
New Orleans, LA
New Haven, CT
New York, NY
Orlando, FL
Philadelphia, PA
Providence, RI
Richmond, VA
San Francisco, CA
San Antonio, TX
Seattle, WA
Stanford, CA
Storrs, CT
St. Louis, MO
Stony Brook, NY
Washington, D.C.

**LYME EDUCATION
AMBASSADORS**

Clifton Park, NY
Champaign, IL
Chicago, IL
Columbia, MD
Collins, CO
Crown Point, ID
Dallas, TX
Decatur, TX
Duncan, OK
Essex Junction, VT
Fort Benning, GA
Houston, TX
Lincolnville, ME
Louisville, KY
Midlothian, VA
New Market, MD
New York, NY
Oldsmar, FL
Pompano Beach, FL
Saint Cloud, FL
San Diego, CA
Uxbridge, MA
West Hurley, NY
Washington, CT
Walnut, IL

SUMMER CAMP PROGRAMS

Alton, NH <i>(2)</i>	Equinunk, PA <i>(2)</i>	Marion, NC	Queensbury, NY
Bantam, CT	Fairfield, NJ	Milford, PA	Raymond, ME <i>(2)</i>
Barkhamsted, CT	Fairlee, VT <i>(2)</i>	Minong, WI	Ridgecrest, NC <i>(2)</i>
Beach City, OH	Fayette, ME	Monmouth, ME <i>(2)</i>	Rock Hill, NY
Beach Lake, PA	Galway, NY	Morris, CT	Rosholt, WI
Becket, MA	Glen Spey, NY	Mt. Vernon, ME	Roslyn Heights, NY
Black Mountain, NC	Great Barrington, MA	Mukwonago, WI	Smithfield, ME
Brant Lake, NY	Hanover, VA	Naples, ME	South Kent, CT
Bridgton, ME	Hartfield, VA	Nassau, NY	Spencer, NY
Bryn Mawr, PA	Hartford, ME	New City, NY	Spring Grove, VA
Buckingham, PA	Hayward, WI	Oakland, ME	Stanhope, NJ
Canadensis, PA	Hendersonville, NC	Oconomowoc, WI	Starlight, PA
Casco, ME	Henryville, PA	Orkney Springs, VA	Stroudsburg, PA
Cleveland, GA	Hinsdale, MA	Oxford, ME	Swan Lake, NY <i>(2)</i>
Copake, NY <i>(2)</i>	Honesdale, PA <i>(5)</i>	Oxford, WI	Thetford Center, VT
Decatur, MI	Kent, CT	Peru, MA	Thompson, PA <i>(3)</i>
Denmark, ME	Kunkletown, PA	Piermont, NH	Toano, VA
Eagle River, WI	Kunkletown, PA	Pittsfield, MA	Tyler Hill, PA
East Brunswick, NJ	Lake Clear, NY	Poland Spring, ME	Wantagh, NY
East Chatham, NY	Lake George, NY	Poland, ME	Warrington, PA
East Greenbush, NY	Lakewood, PA	Post Mills, VT	Washington, CT
East Stroudsburg, PA	Lakewood, PA <i>(2)</i>	Poyntelle, PA	Webster, WI
Elizaville, NY	Lenox, MA <i>(2)</i>	Preston Park, PA <i>(2)</i>	West Stockbridge, MA
Elmsford, NY	Liberty, NY	Putnam Valley, NY	Winsted, CT

As of 2018. For locations with multiple people or camps, it's noted.

CONNECTING WITH THE WORLD

AN IMPORTANT PART OF GLA’S MISSION IS TO EDUCATE AND INFORM LYME SUFFERERS AND THEIR FAMILIES, HEALTH CARE PROFESSIONALS AND THE GENERAL PUBLIC. OUR UNIQUE CONTENT IS DISTRIBUTED WIDELY VIA OUR WEBSITE, SOCIAL MEDIA, E-BLASTS, BLOGS, NEWSLETTERS AND COMMUNITY PROGRAMS. WE ARE COMMITTED TO PROVIDING ENGAGING AND COMPELLING CONTENT THAT IS AUTHORITATIVE AND TRUSTWORTHY.



SOCIAL MEDIA

Social media has become an increasingly important way to reach and engage Lyme patients, their families and caregivers, as well as community-at-large. Our Instagram community climbed to 10,000 followers by year’s end—the most of any Lyme organization. Moreover, our Facebook community had a total reach of 3.2 million, with more than 1.6 million Twitter impressions and more than 78,000 views on GLA’s YouTube.

To raise awareness of critical issues facing the Lyme community, GLA also hosted a Facebook Live discussion with investigative journalist Mary Beth Pfeiffer, author of *Lyme: The First Epidemic of Climate Change*. Social media also helped GLA’s fundraising efforts. For example, Facebook fundraising jumped 700% from 2017 to 2018.

NEWSLETTER

GLA’s bi-monthly e-mail newsletter highlights the latest in Lyme disease research, blog posts, updates about GLA events, our vast resources online, as well as our educational and awareness-raising initiatives and more.

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WEBSITE

Throughout the year, GLA continued to expand the content of GLA.org, its highly comprehensive website, and to refine its functionality. By the end of 2018 the site had served more than 283,000 users from 193 countries, which constitutes a 124% increase in total website traffic over 2017. GLA.org provides reliable information and resources focusing on tick-bite prevention, tick removal, methods of protecting children and pets, locating Lyme-literate doctors and laboratories, as well as blogs, personal stories and up-to-date research findings.

In 2018 GLA introduced an expanded Lyme Resources section on the site, providing users with access to important information from tick testing labs, financial resources, support groups, to patient and caregiver support.

LYME-LITERATE DOCTOR REFERRALS

It’s not easy to find doctors with experience diagnosing and treating Lyme disease. For this reason, GLA has been actively connecting patients and their families with Lyme-literate doctors around the nation. To date, GLA has helped more than 40,000 families connect with health practitioners who know how to treat Lyme and other complex tick-borne diseases from a perspective which relies on the entirety of the patient’s health profile as opposed to just the current problematic Lyme diagnostic test alone.

PUBLIC SERVICE ANNOUNCEMENTS

GLA continued its Lyme disease awareness campaign with three print ads (PSAs) in Conde Nast’s *Vogue*, *The New Yorker*, *Glamour*, *Brides*, *Architectural Digest* and *GQ* magazines, as well as such Meredith Parenting Group publications as *Parents* and *Family Fun*. The PSAs focused on professional athletes who have faced issues with the current unreliable Lyme diagnostic test, Lyme’s broad spectrum of symptoms, and its impact on their ability to function in their daily lives. Each month, the PSAs reached approximately 1.3 million households across the U.S.



“MY SON ADAM IS AN EQUESTRIAN ATHLETE AND WAS DIAGNOSED WITH LYME LAST YEAR. YOUR INFORMATION HELPED US TO FIND A PHYSICIAN THAT WAS VERY KNOWLEDGEABLE. ADAM’S QUALITY OF LIFE HAS GREATLY IMPROVED AND HE CONTINUES TO COMPETE SUCCESSFULLY TODAY. WE THANK YOU FOR YOUR CONTINUED EFFORTS TO FIGHT LYME DISEASE.”

Jeffrey R, Florida

GENERATING PRESS & AWARENESS

GLOBAL LYME ALLIANCE CONTINUED TO DISTINGUISH ITSELF IN 2018 BY RECEIVING WIDESPREAD COVERAGE OF OUR IMPORTANT WORK IN PROMINENT NATIONAL, REGIONAL AND DIGITAL MEDIA OUTLETS, AS WELL AS ON SOCIAL MEDIA PAGES. BY THE END OF THE YEAR, WE HAD 20 MILLION MEDIA IMPRESSIONS THROUGH OUR EDUCATIONAL, SOCIAL MEDIA AND OUTREACH EFFORTS WITH COVERAGE IN MAJOR PUBLICATIONS, SUCH AS *PREVENTION*, *READER’S DIGEST* AND *SHAPE*. OUR GREENWICH AND NEW YORK GALAS WERE BOTH COVERED BY LEADING NATIONAL AND GLOBAL OUTLETS, FROM *US WEEKLY*, ET ONLINE AND BRAVOTV.COM TO THE *DAILY MAIL UK*.

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- Prevention Magazine

Shape Magazine

Chemical and Engineering News

Reader’s Digest

Bustle

NBC Right Now

People

Thrive Global

Cheddar TV

Outbreak News

Fox 5 News Channel New York

Albany Times Union

Daily Mail, UK

GOLF Channel
- The American Business Journal

Canadian Insider

Shannon Miller Lifestyle

ET Online

Fresno Bee

Invited NYC

Just Jared

Bravo TV.com

Look to the Stars

US Magazine

NY Gossip Gal

Poughkeepsie Journal

The Toronto Star

Greenwich-Post
- Greenwich Sentinel

Greenwich Time

Greenwich Magazine

Fairfield County Look

Stamford Advocate

Connecticut Plus

BioPortfolio

Ridgefield’s Hamlet Hub

WGCH

CBS News 8

Infection Control Today

GlobeNewswire

UConnToday



GLA CEO Scott Santarella and MMA/UFC Champion Jim Miller on Good Day New York, Fox 5 NY

EVENTS WITH PURPOSE: FROM GALAS TO GRASSROOTS

GLOBAL LYME ALLIANCE HOSTS MANY EVENTS EACH YEAR—FROM ELEGANT GALAS TO REGIONAL RUN/WALKS, FROM ATHLETIC ENDURANCE EVENTS TO SUBLIME FOOD TASTINGS—AS A MEANS OF RAISING LYME AWARENESS AND MUCH-NEEDED FUNDS TO SUPPORT OUR MISSION.



NEW YORK GALA, OCTOBER 11, 2018 CIPRIANI 42ND STREET, NEW YORK, NY

Our fourth annual New York Gala was attended by more than 700 supporters and raised \$2 million. The gala recognized Erin Walker, equestrian and GLA board member, and wife of 2016 PGA Championship winner Jimmy Walker; and Ramona Singer, entrepreneur, philanthropist and star of Bravo TV's Real Housewives of New York City, for raising Lyme disease awareness.

OTHER HIGHLIGHTS INCLUDED: Global superstar Avril Lavigne who recorded a special message that was shared announcing that she had officially joined GLA's Board of Directors; past GLA honoree Yolanda Hadid who spoke about her Lyme journey; Tony Award-winning actress and recording artist Sutton Foster who performed; members of the Big Apple Circus who performed; Nobu which provided sushi, and Lori Stokes, co-anchor of "Good Day New York," who hosted the event.

Co-Chairs for the Gala were Joseph Abboud, celebrated menswear designer and author; Charles Balducci, co-founder, Snyder/Balducci Group, Merrill Lynch; Chris Corrinet, senior VP, CBRE Group; Robert Kobre, vice chairman, Credit Suisse; Jarrod Nadel, chief product development officer, Tailored Brands, Inc.; Drew Nieporent, owner, Myriad Restaurant Group; Peter Norley, COO, Credit Suisse Securities; and Larry Scott, owner, Lawrence Scott Events. Honorary Event Chairs included Jay McInerney, Jim Miller, Mary Beth Pfeiffer, Mike Schneider, Victor Slezak, and Marisol and Rob Thomas.

GREENWICH GALA, MAY 12, 2018 HYATT REGENCY GREENWICH, GREENWICH, CT

GLA's Greenwich Gala honored Lyme disease patients and researchers. Serving as emcee was Gretchen Carlson, TV journalist, author, female empowerment advocate and chair of The Miss America Organization. She noted that the three Event Co-Chairs—Stephanie Ercegovic with daughters Adriana & Eloise, Sonya Rolin with daughter Tatiana Donald, and Astrid Womble with daughter Christina Womble, were "successful and resilient moms, strong in spirit and conviction" since all three have been caregivers and supporters of daughters who continue to suffer from Lyme disease.

Dr. Nicole Baumgarth, D.V.M., Ph.D. — Professor of Immunology at the Department of Pathology, Microbiology & Immunology and the Center for Comparative Medicine, University of California, Davis—a GLA grantee, received the Lauren F. Brooks Hope Award for being among the first to document immunologic failures on multiple levels in Lyme disease. Singer-songwriter Jesse Ruben, introduced by his mother, Janet Ruben, received the StarLight Award for sharing his personal story and his ongoing Lyme outreach efforts.

EVENTS WITH IMPACT, *cont.*



2nd Annual SubLyme Soiree, Erin Walker, Alexandra Moresco, Jesse Ruben, Scott Santarella

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SubLyme Soirée August 23, 2018

It was a night not to be missed as our second annual SubLyme Soirée, a Chicago foodie fundraiser, raised \$108,000 for GLA, almost doubling the amount raised in the previous year. Guests enjoyed healthy and delicious bites provided by Chicago’s top chefs and took part in both live and silent auctions. The event was led by Alex Moresco and Kasey Passen who, sadly, passed away just weeks after the successful fundraiser. The 2019 Sub-Lyme Soiree will be held in Kasey’s honor.

2018 NJ Wine Event: Taste for a Cure April 7, 2018

This educational and entertaining event was held at Trump National Golf Club in Colts Neck, NJ. Some 50 guests enjoyed a wine tasting conducted by Kevin Zraly, renowned wine expert and author of *Windows on the World Complete Wine Course*, followed by a wine-paired buffet dinner. Hosted by Rose and James Anastasio, the event raised more than \$50,000.

Breakfast, Lyme Panel & Shop-For-A-Cure May 2, 2018

Guests who attended this fun and informative Westchester, New York breakfast event enjoyed a panel discussion with renowned physicians Kenneth Block, Tania Dempsey and Richard Horowitz, a talk by Siggy Flicker, of Bravo TV’s *The Real Housewives of New Jersey*, and plenty of shopping. Hosted by Robin Jacobs and Alyssa Sokoloff, the event raised more than \$40,000.

Christmas CoffeeHouse December 23, 2018

To celebrate Christmas cheer and the spirit of the season, the OSC Charitable Foundation held its 6th annual Christmas Coffeehouse. Those who attended the Buffalo, New York event enjoyed listening to music, coffee and delicious desserts. The event raised \$20,000.

Breakfast with Ally Hilfiger April 19, 2018

Lyme Warrior Ally Hilfiger, author of *Bite Me: How Lyme Disease Stole My Childhood, Made Me Crazy, and Almost Killed Me* gave an intimate talk into her battle with Lyme disease, her relationship to fashion, and her foray into entrepreneurship at a GLA-hosted brunch in Chicago.

ENDURANCE EVENTS

Global Lyme Alliance was honored to be named an official Charity Partner of the 2018 TCS New York City Marathon — a first for any Lyme organization. There were five members of Team GLA — Annie Cunningham of Denver, Colorado; Thor Kirleis (*below left*) of North Reading, Massachusetts; Nani Luculescu (*bottom left*) of Los Alamitos, California; Dan Gautreau (*below right*), of Brooklyn, New York, and Team Captain Jesse Ruben, also of Brooklyn. Each teammate has been affected by Lyme in one way or another. All five finished the marathon and raised more than \$22,000 to help support Lyme disease research.

In addition to the Marathon, GLA continued its Charity Endurance Event Program with participants in events such as the Long Island Tough Mudder Half, the Greenwich Half Marathon, Western States 100 Mile Ultramarathon, Sandman & Santa Cruz Triathlon, plus Rock ‘n’ Roll’s Philadelphia 5K, Nashville and Philadelphia Half Marathons, and its Washington D.C. 5K.



THE POWER OF GRASSROOTS FUNDRAISING

GLOBAL LYME ALLIANCE IS FORTUNATE TO HAVE MANY HIGHLY DEDICATED AND PASSIONATE SUPPORTERS—BOTH INDIVIDUALS AND COMPANIES — WHO RAISE FUNDS FOR GLA IN CREATIVE AND FUN WAYS. AMONG THE COMPANIES RAISING FUNDS WERE BACCARAT, LITTLE BIRDIES BOUTIQUE, VERONICA BEARD, JOJO RINGS, MULTILEVEL FITNESS, KENDRA SCOTT, BEAUTY BAKERIE COSMETICS, TELETIES, AND N2PUBLISHING.

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IN ADDITION, WE WOULD LIKE TO THANK:

Fab Finds by Sarah with “Keep Moving” T’s	Nancy Lombardi, Holly Days and Mistletoes	Lyme Awareness Club
The Avril Lavigne Foundation, Head Above Water T’s	Michael Chadwick, Lit for Lyme	Jenn Beddard
Chloe O’Neill, More Than Lyme Adventures event	GLA Young Leaders Dinner—Restaurant Week	Indie Cowie
Missy Razor & Kinsey Fritz, East End Shop and Dine to End Lyme Disease	Alex Moresco & Abbey Storey, for Kendra Scott Event to Honor Kasey Passen	Ryann McIntyre
Dana Blanchard, The Barre Method Darien	Greenwich High School	Denton
		Kristin Holman

TOGETHER WE CAN CONQUER LYME DISEASE! **#TEAMGLA**



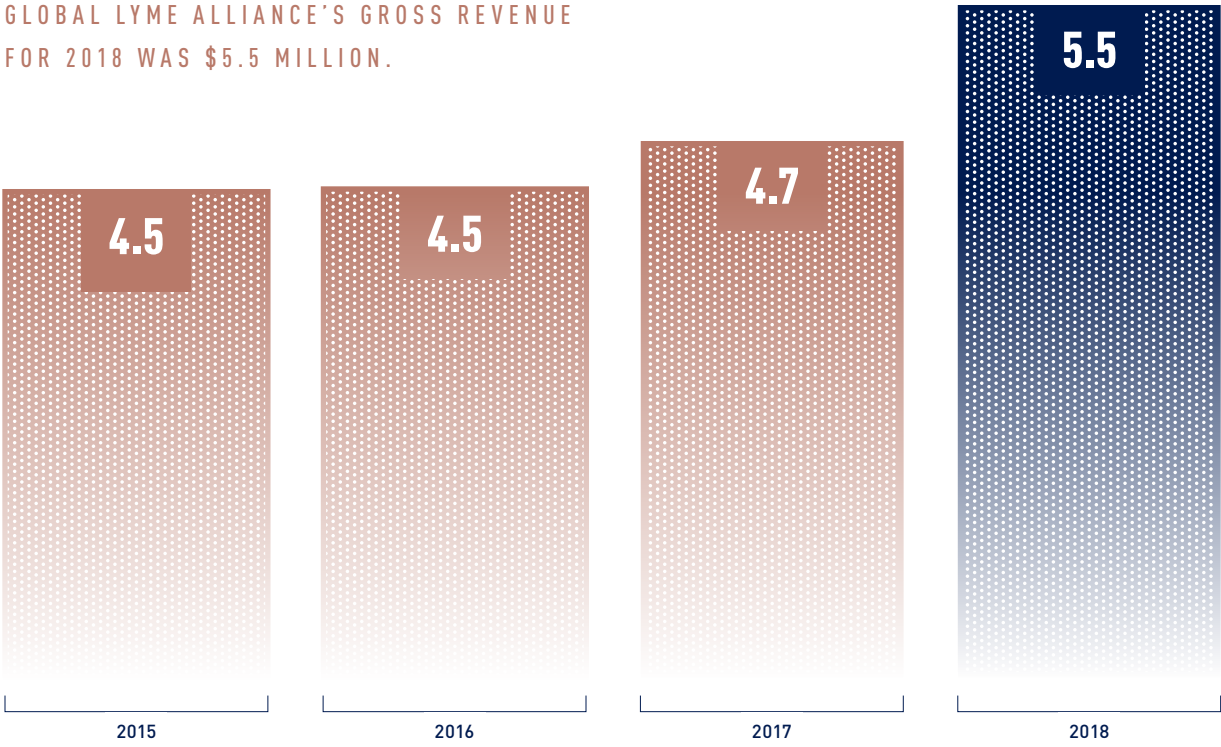
TV personality Siggie Flicker joins event hosts Alyssa Sokoloff (left) and Robin Jacobs (right) at the 2018 Westchester Breakfast, Lyme Panel & Shop-for-a-Cure



FINANCIALS

GLA IS DRIVEN BY DONATIONS FROM THE COMMUNITY, WHETHER IT'S \$50 OR \$5,000, EVERY DOLLAR COUNTS. THE GENEROSITY AND COMMITMENT OF OUR SUPPORTERS FUELS GLA'S MISSION TO CONQUER LYME AND OTHER TICK-BORNE DISEASES. AND MOST IMPORTANTLY, HELP PATIENTS.

GLOBAL LYME ALLIANCE'S GROSS REVENUE FOR 2018 WAS \$5.5 MILLION.

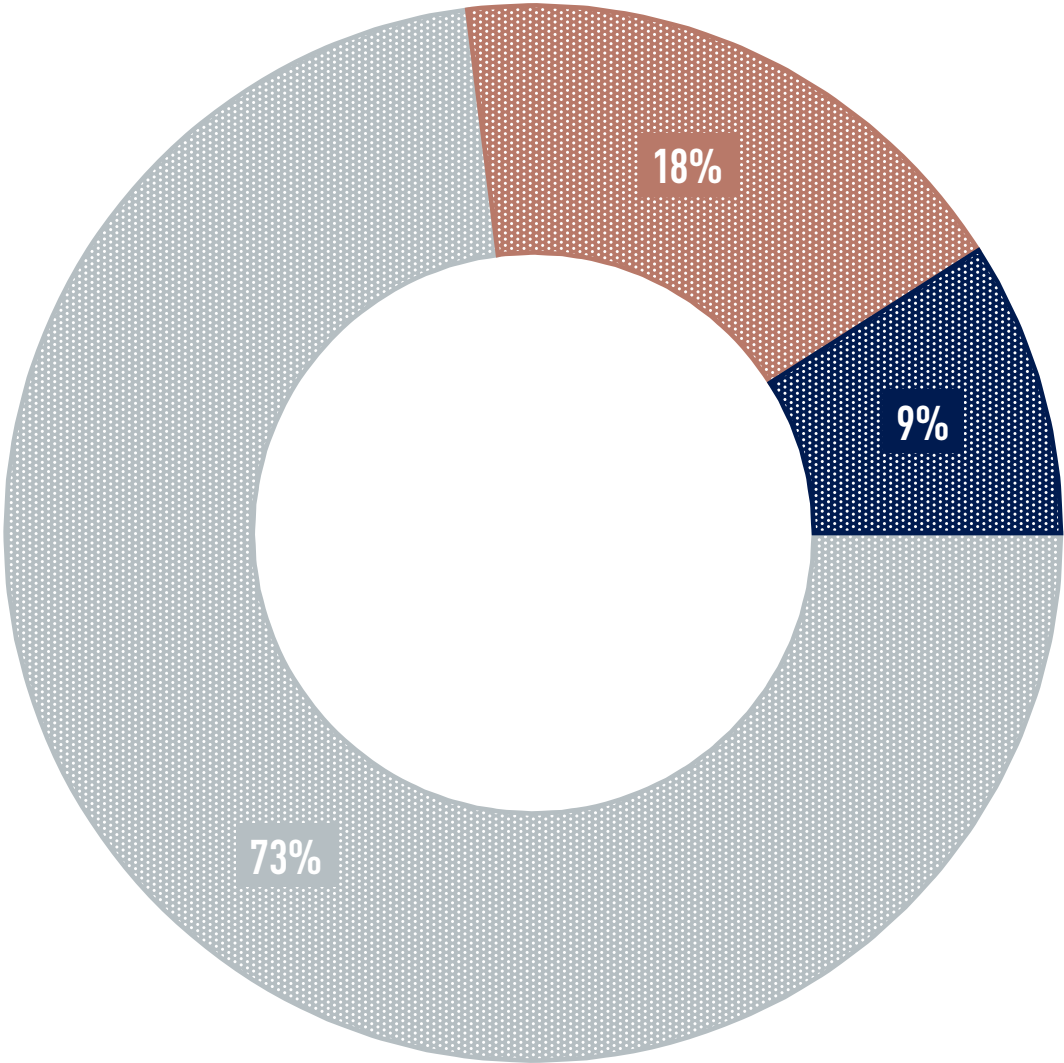


NOTES: 2015 and 2016 exclude extraordinary in-kind donations. For complete financial information, including current IRS-990, go to GLA.org/financials

GLOBAL LYME ALLIANCE, INC. STATEMENTS OF ACTIVITIES AND CHANGES IN NET ASSETS YEARS ENDED DECEMBER 31, 2018 & DECEMBER 31, 2017

	2018	2017
SUPPORT & REVENUE		
Contributions	\$2,380,147	\$1,535,565
Special Events Income, Net of Direct Expenses of \$651,567 & \$666,997, Respectively	\$2,345,037	\$2,447,835
In-kind Contributions	\$78,783	\$65,600
Investment Income	\$39,469	\$13,904
TOTAL SUPPORT & REVENUE	\$4,843,436	\$4,062,904
EXPENSES		
Program	\$3,321,391	\$3,547,830
Management & General	\$413,887	\$466,327
Fundraising	\$797,488	\$666,226
TOTAL EXPENSES	\$4,532,766	\$4,680,383
CHANGES IN NET ASSETS	\$310,670	[\$617,479]
NET ASSETS, BEGINNING OF YEAR	\$4,363,549	\$4,981,028
NET ASSETS, END OF YEAR	\$4,674,219	\$4,363,549

2018 BUDGET ALLOCATIONS



- PROGRAMS
(Research, Education & Awareness)
- FUNDRAISING
- MANAGEMENT & GENERAL

GLOBAL LYME ALLIANCE, INC.
STATEMENTS OF FINANCIAL POSITION
DECEMBER 31, 2018 & DECEMBER 31, 2017

ASSETS	2018	2017
CURRENT ASSETS		
Cash & Cash Equivalents	\$3,444,250	\$4,001,095
Contributions Receivable, Current	\$762,894	\$363,065
Prepaid Expenses	\$56,446	\$45,957
TOTAL CURRENT ASSETS	\$4,263,590	\$4,410,117
CONTRIBUTIONS RECEIVABLE, LONG TERM	\$398,263	-
INVESTMENT IN THIRD PARTY	\$178,000	\$85,024
FIXED ASSETS, NET	\$69,101	\$65,719
OTHER ASSETS	\$40,000	\$15,676
TOTAL ASSETS	\$4,948,954	\$4,576,536

LIABILITIES AND NET ASSETS

CURRENT LIABILITIES		
Accounts Payable & Accrued Expenses	\$191,543	\$113,103
Grants Payable	-	\$49,884
Deferred Revenue	\$50,000	\$50,000
Deferred Rent	33,192	-
TOTAL LIABILITIES	\$274,735	\$212,987
NET ASSETS		
Without Donor Restrictions	\$3,129,781	\$3,753,497
With Donor Restrictions	\$1,544,438	\$610,052
TOTAL NET ASSETS	\$4,674,219	\$4,363,549
TOTAL LIABILITIES AND NET ASSETS	\$4,948,954	\$4,576,536

—

JOIN US

IN SEPTEMBER, GLOBAL LYME ALLIANCE REPORTED THE TRAGIC LOSS OF KASEY LYNN PASSEN, 37, A LYME WARRIOR DETERMINED TO MAKE PEOPLE AWARE OF THE ESCALATING LYME THREAT IN CHICAGO AND ITS OUTLYING AREAS. SHE HAD SPEARHEADED SEVERAL EVENTS FOR GLOBAL LYME ALLIANCE, FROM EDUCATIONAL DISCUSSIONS TO TWO HIGHLY SUCCESSFUL “SUBLYME SOIRÉE” FUNDRAISERS. HER GREATEST WISH WAS TO PREVENT OTHERS FROM SUFFERING FROM LYME THE WAY SHE HAD.

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Kasey’s passing drives us at GLA to work even harder to reduce the collective suffering of those with Lyme and other tick-borne diseases. Her memory and drive to help patients, pushes us in all facets of our mission, from new research, to education programs, to awareness initiatives.

GLA-funded scientists are focused on pushing the boundaries of science and transforming their discoveries into real change for the Lyme community—including the development of several accurate, dependable diagnostic tests. Among other projects, our researchers are making strides in understanding the role the human immune system plays in the illness, and testing new ways to alleviate symptoms that persist despite standard antibiotic treatment. At the same time, GLA is establishing critical partnerships and collaborations with other nonprofit organizations focused on other diseases as a way of translating their findings into real benefits for Lyme patients.

Healthcare technologies—biotechnology, rapid genetic sequencing and precision medicine—are propelling research at an accelerated pace, allowing scientists to feel more optimistic than ever about solving the Lyme puzzle. This new era of advances in medical technological capability could make significant differences in tens of thousands of lives.

As always though, scientific progress will remain dependent on tenacity, time, and funding. With projected federal cuts in 2019 tick-borne disease funding, GLA must depend on private funding to fill the gap. Your generosity helps us fund urgently-needed science that make discoveries possible, create new treatments, and pioneer pathways to—ultimately—cure Lyme and other tick-borne diseases.

GLA is fighting for all the Kasey’s in the world. We hope you will join us.



THANK YOU FOR YOUR ONGOING SUPPORT. TO MAKE A DONATION, VISIT **GLA.ORG/DONATE** OR CALL **203 969 1333**