



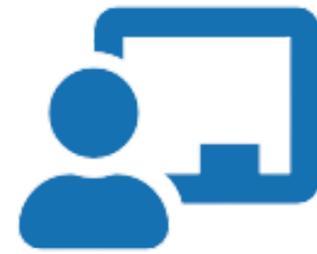
# **Philanthropic Partnership Deck**

**February 2022**





**We are a nonprofit committed to alleviating the suffering caused by invisible illnesses, through education, research, and community empowerment.**



## **EDUCATION**

We are developing medical education for front-line clinicians, aiming to fill the evidence gap between how those with invisible illnesses are treated and emerging research that has not yet reached widespread circulation.



## **RESEARCH**

Invisible is engaged in original research designed to accelerate the movement of evidence on better diagnostics, treatments, and cures to patient care



## **COMMUNITY**

We are nurturing a diverse set of projects with a common aim—to foster public understanding, compassion, prevention strategies, and solution development for those suffering from invisible illnesses.

# Invisible's Team is Solving the Challenges of Vector-Borne Illness

We have gathered the top global experts in vector-borne illness who tirelessly work to realize a world where no one suffers from diseases that should be **easy to diagnose and simple to cure**.

We are academic and community physicians, veterinarians, scientists, educators, innovators, patient advocates, and caregivers. We have been educated at the top schools and have published widely in academic medical journals. **We are the team to solve this problem.**



# Invisible International Scientific and Medical Team

## Institutional Affiliations

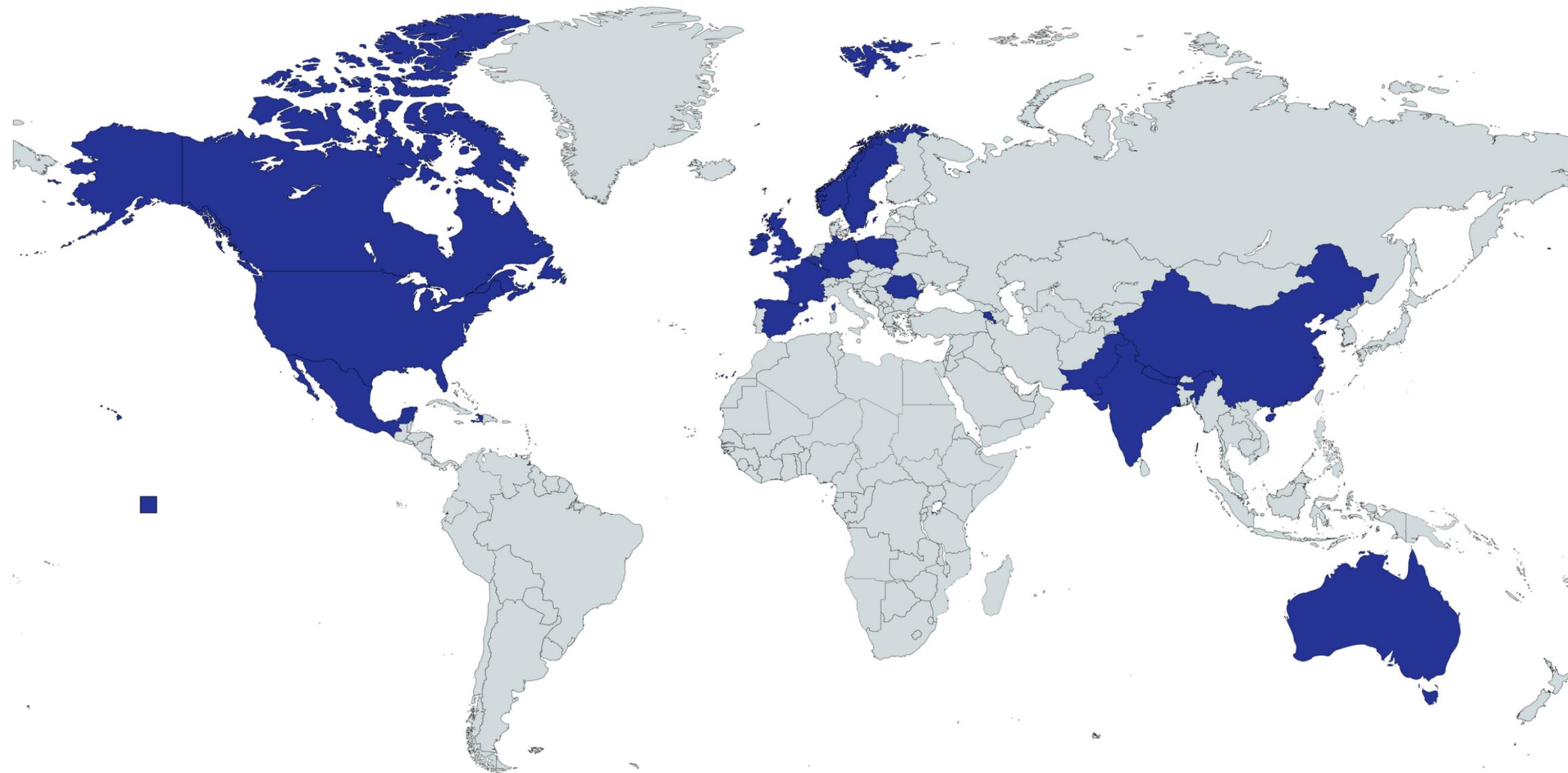


# Invisible International's Team



# Invisible's Global Footprint

This map represents the countries where Invisible has advisors, learners, and participants in its programs. We seek to expand our international presence.



## **Vector-Borne Illnesses: Program Focus**

**Peaceful and rejuvenating interactions with nature are now fraught with danger in our era of rapid environmental change.**

**Wildfires, red tides, and epidemics are all symptoms of an ecosystem out of balance.**

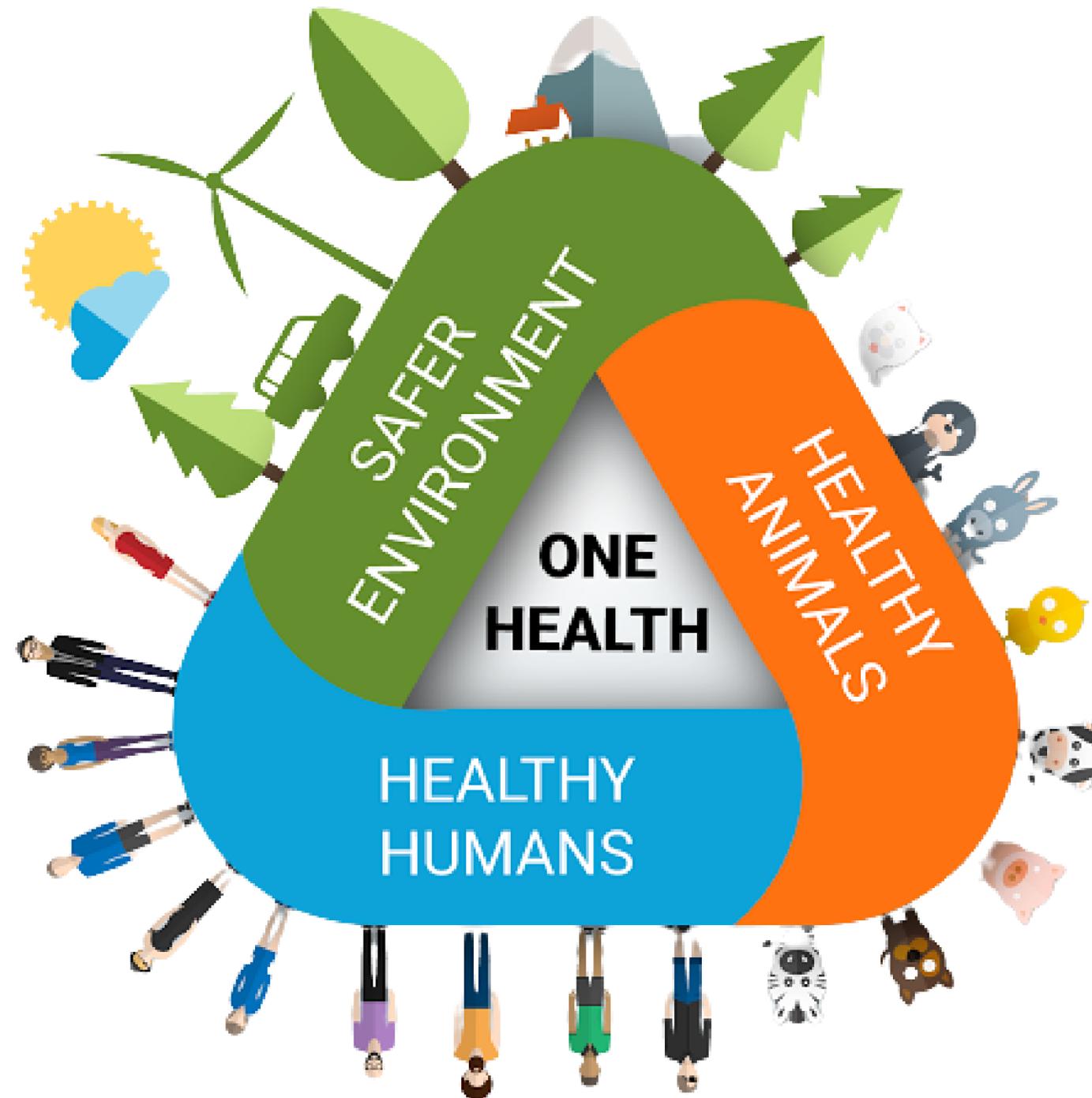
**Invisible International's top priority is to lessen these threats by addressing the scourge of vector-borne illnesses like Lyme disease, Bartonella, and other tick-borne illnesses.**

## **One Health: A Collaborative Approach**

**Vector-borne illnesses can lead to chronic disease in both humans and animals. In order to reduce this suffering in this era of rapid climate change, Invisible uses a One Health approach.**

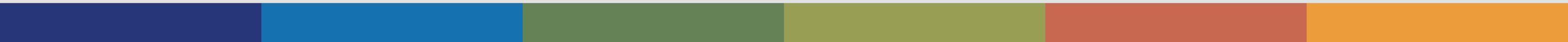
**Our programs are designed with the goal of achieving optimal health outcomes while recognizing the interconnection between people, animals, plants, and their shared environment.**

# One Health Framework



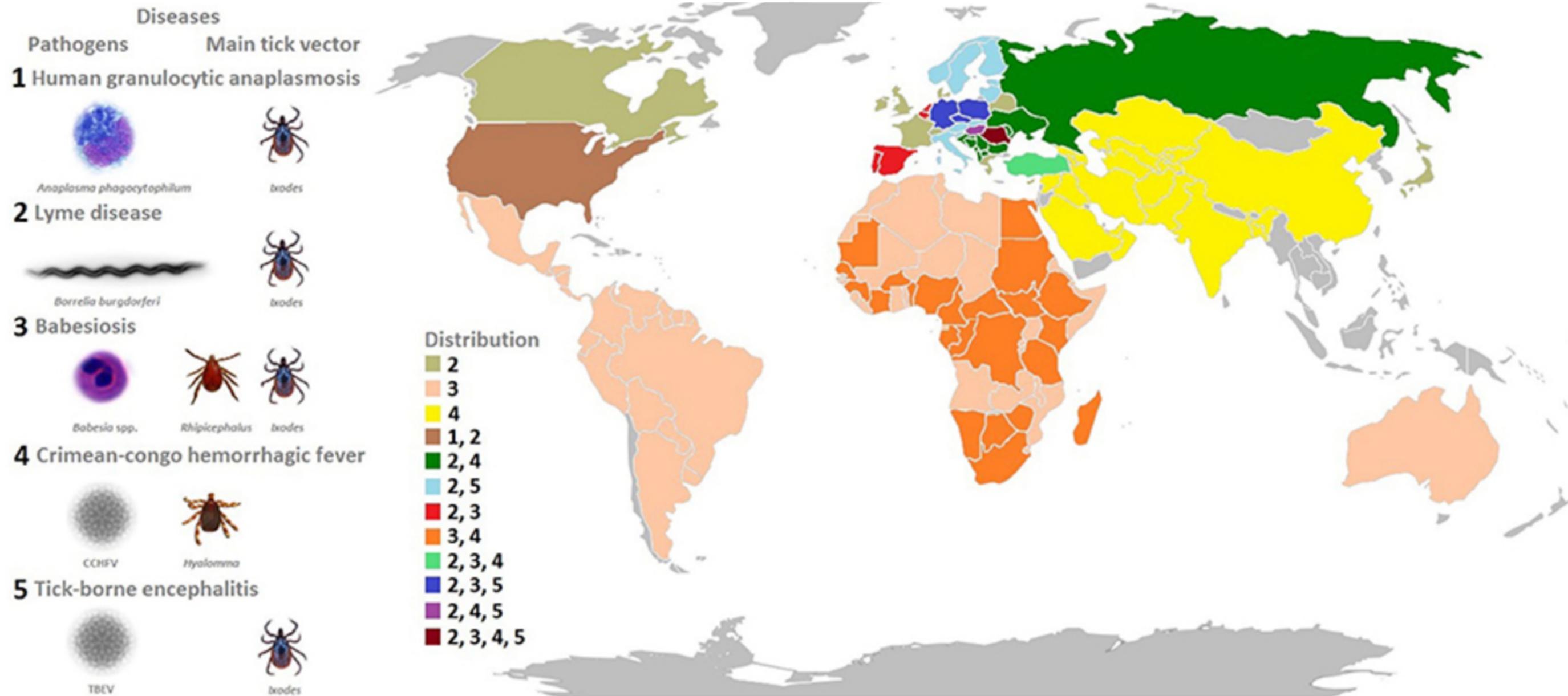


# Vector-Borne Illness: The Problem



# A Global Epidemic

Tick-borne pathogens that constitute a growing burden for human and animal health



Tick-Pathogen Interactions and Vector Competence: Identification of Molecular Drivers for Tick-Borne Diseases.

Front. Cell. Infect. Microbiol., 07 April 2017 | <https://doi.org/10.3389/fcimb.2017.00114>

# Shortage of Educated Clinicians

**There is a global deficit of physicians who are educated to care for patients with complicated vector-borne illness.**

- More than half of tick-borne illness patients saw **7** or more physicians before being diagnosed (1)
- **30%** had traveled more than 100 miles; and **9%** had traveled over 500 miles. (1)
- Danish study revealed Lyme patients are **75%** more likely to commit suicide. From antidotal evidence some of these patients commit suicide while on long waiting lists for clinical care. (2)
- Clinicians miss **89%** of patients who are tested for acute Lyme disease. (10)

# Lack of Validated Treatment Protocols

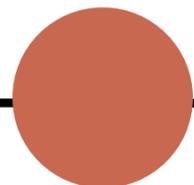
- The CDC estimates **476,000 new cases** of Lyme disease each year, making it the fastest vector-borne illness in the United States.
- Approximately **10 to 36% of those treated with antibiotics** go on to experience **disabling** long-haul symptoms, such as severe fatigue, joint/muscle pain, brain fog, & neurologic symptoms.
- There have been no human treatment studies published in over 20 years, and only **0.30%** of the National Institutes of Health Lyme research budget has been focused on human treatment studies in the last five years (2015-2019).

*"It's clear from the cumulative evidence that persistent Lyme disease is a common occurrence and that we urgently need to explore more effective treatment strategies."*

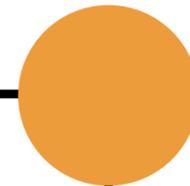
Monica Embers, PhD, Director of Vector-Borne Disease Research,  
Tulane University School of  
Medicine

# Poor Diagnostic Tools

**The weak link in reducing the public health burden of Lyme disease and other vector-borne illnesses is the lack of fast, cheap, and reliable diagnostic approaches.**



Early Lyme diagnoses are often delayed because the Lyme screening tests aren't reliable in the first month after infection and not everyone produces or notices a bullseye rash.



In Late Stage Lyme disease, antibody testing can be unreliable in the sickest patients, those whose antibody production may be hobbled by concurrent infections or a weak immune system.

**Complicating factor in diagnostic paradigm:**

**Many patients are infected with multiple vector-borne pathogens, and there is no simple diagnostic roadmap for clinicians to follow for these cases.**



# Vector-Borne Illness: Invisible International's Solutions



# We Educate Physicians

## **Continuing Medical Education**

- For the last 2 years, Invisible has published the world's first accredited, no-cost medical education curriculum on vector-borne illnesses. This library of continuing medical education (CME) courses on diagnosis, emerging research, and treatment is accessible to both physicians and patients online.

## **Medical School Vector-borne Illness Curriculum**

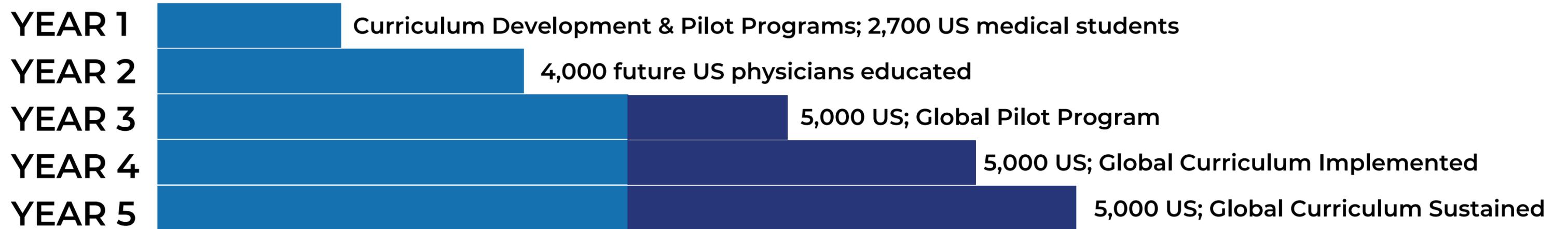
- In 2022, Invisible will launch up-to-date Lyme disease/bartonellosis/vector-borne disease curriculum modules and grand rounds lectures to medical schools across the U.S.
- We plan to scale this project in the US, and then to the France, Ireland, Saudi Arabia, and the UK.

## **Mental Health Education and Resource Platform**

- This program is an expansion of a platform our team developed and led for 5 years at Harvard Medical School.
- A team of mental health experts will develop an online educational platform clinicians and a resource network for patients and caregivers.

# We Educate Physicians

## 5 year Projected Impact



# Continuing Medical Education Library

(IN)VISIBLE | MONTECALVO  
EDUCATION | FOUNDATION

Courses Curated Article Library Physician Kit [♥ Donate](#) ...

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## Tick-borne illness, explained.

Accredited evidence-based physician medical education

[Browse free CME courses](#)



### Featured courses



#### A historic case study on chronic Lyme...

0.5 CME

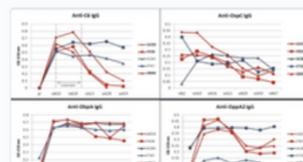
Kenneth B. Liegner, MD



#### Neurological manifestations of...

1.0 CME

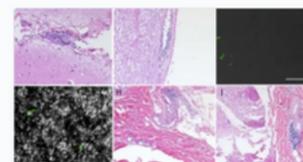
Edward Breitschwerdt, DVM  
North Carolina State University  
College of Veterinary Medicine



#### The impact of immune responses on...

0.5 CME

Monica E. Embers, PhD  
Tulane National Primate Research  
Center



#### Antibiotic efficacy for treatment of Lyme...

0.5 CME

Monica E. Embers, PhD  
Tulane National Primate Research  
Center



#### Borrelia persistence "Bench to Bedside" E...

CME credit pending

Christine Green, MD  
Invisible International



#### Bartonellosis: History of a hidden pandemic

1.0 CME

Edward Breitschwerdt, DVM  
North Carolina State University  
College of Veterinary Medicine



#### Bartonellosis: Vectors and other modes of...

1.0 CME

Edward Breitschwerdt, DVM  
North Carolina State University  
College of Veterinary Medicine



#### Bartonellosis reservoir hosts: Bats,...

1.0 CME

Edward Breitschwerdt, DVM  
North Carolina State University  
College of Veterinary Medicine



#### The epidemiology of Lyme disease

0.5 CME

Elizabeth L. Maloney, MD



#### Managing Ixodes pacificus bites

1.0 CME

Elizabeth L. Maloney, MD



#### Lyme carditis, more than blocked beats

1.0 CME

Elizabeth L. Maloney, MD



#### Serologic testing in Lyme disease

1.0 CME

Elizabeth L. Maloney, MD



#### Case studies in early Lyme disease

1.0 CME

Elizabeth L. Maloney, MD



#### Managing Ixodes scapularis bites

1.0 CME

Elizabeth L. Maloney, MD



#### Basic principles of diagnostic testing

0.5 CME

Elizabeth L. Maloney, MD



#### When a blacklegged tick bite is more tha...

0.25 CME

Elizabeth L. Maloney, MD



#### Persistent Lyme disease

1.0 CME

Elizabeth L. Maloney, MD



#### 7 years of blood-based Lyme disease testing

0.5 CME

Elizabeth Lee-Lewandrowski, PhD, MPH  
Harvard Medical School



#### Neurologic complications of Ly...

0.5 CME

Peter Novak, MD, PhD  
Harvard Medical School



#### Diagnosis of Bartonella species...

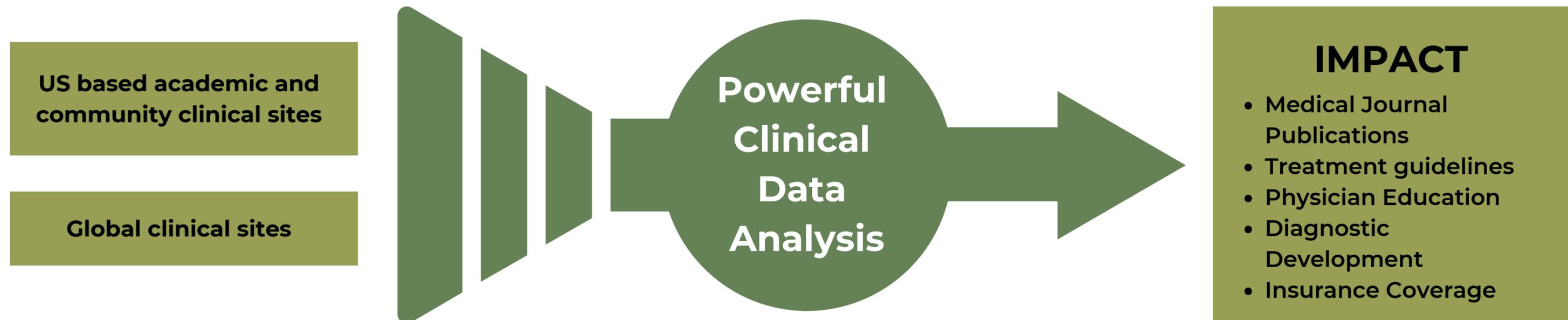
1.0 CME

Edward Breitschwerdt, DVM  
North Carolina State University  
College of Veterinary Medicine

# We Conduct Groundbreaking Research

Tick Bytes Clinical Data Repository: a cloud-hosted, globally accessible database that will provide quality de-identified vector-borne illness patient data to researchers to facilitate the development of better symptom profiles, diagnostics approaches, and treatment protocols.

- **Impact:** this project will alter the scientific paradigm for vector-borne disease by building a powerful body of evidence through rapid, high quality scientific publications. This will lead to updated treatment guidelines and magnify education for clinicians. It should significantly reduce the economic and societal costs of these diseases over time.



# We Empower Scientific Communities.

**By powering and connecting scientific, medical, and patient communities, we work to foster public understanding, compassion, prevention strategies, and solution development for those suffering from invisible illnesses.**

- **Innovation** events, such as hackathons, incubators, and expert summits, designed yearly to accelerate progress on the challenges of vector-borne illness
  - 2020-21: Education & Awareness Tick-Borne Illness Hackathon
  - 2021-22: Diagnostic Development Incubator
  - 2023: Health Systems & Chronic Disease Management: International Summit
- **Storytelling for Change:** We've created a storytelling engine to publish a steady stream of popular stories that educate the public on invisible diseases and empower patients to push for evidence-based treatment of their very real illnesses. An established team of clinicians, researchers, and writers will publish popular media stories that explain invisible illnesses, including the emerging science, the marginalization of patients, and the societal impacts.
  - 2022 forthcoming patient story on Bartonella on Vox Media

# Join Invisible to be Part of the Solution

We are currently looking for forward-thinking partners to fund our efforts to advance the science and provide wider access to high-quality, evidence-based patient care. Invisible's team is dedicated to rapid change and out-of-the box thinking in tackling the significant challenges associated with invisible illnesses.

**Sustainable funding for five years will allow our team to radically advance vector-borne illness care and alleviate suffering around the globe. Invisible aims to raise \$20M in order to fuel our education, research, and community empowerment programs.**



# Program Funding Breakdown



Continuing Physician Education: \$450k/year  
Medical School Education: \$400k/year  
Mental Health Provider Education: \$350k/year  
**Annual budget: \$1.2/year**  
**5 year goal: \$6M**



Tick Bytes Clinical Data Research: \$250k/site/year (10 clinical sites)  
**Annual Budget: \$2.5M/year**  
**5 year goal: \$10.M**



Diagnostic Development Incubator: \$150k/year  
Storytelling for Change: \$150k/year  
**Annual Budget: \$300k/year**  
**5 year goal: \$1.5M**

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<https://pubmed.ncbi.nlm.nih.gov/34315282/>
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5. Molecular identification of ticks infesting camels and the detection of their natural infections with Rickettsia and Borrelia in Riyadh province, Saudi Arabia <https://pubmed.ncbi.nlm.nih.gov/33597497/>
6. Molecular prevalence of Bartonella, Babesia, and hemotropic Mycoplasma species in dogs with hemangiosarcoma from across the United States <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0227234>
7. Human louse-transmitted infectious diseases <https://www.sciencedirect.com/science/article/pii/S1198743X14614439>
8. Tick-Borne Diseases in Dogs: Symptoms & How to Prevent <https://www.akc.org/expert-advice/health/tick-borne-diseases-dogs-prevent/#:~:text=The%20most%20important%20tick%2Dborne,consequences%20for%20people%20as%20well.>
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