

Could monoclonal antibodies prevent Lyme disease better than a vaccine?

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<https://danielcameronmd.com/could-monoclonal-antibodies-prevent-lyme-disease-better-than-a-vaccine/>

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Could monoclonal antibodies prevent Lyme disease? The first human clinical trial of Lyme PrEP, a seasonal shot to prevent Lyme disease, has begun enrolling volunteers to evaluate the safety and pharmacology of the treatment. [1]

"Lyme PrEP prevents infection by delivering a single, human anti-Lyme antibody, or blood protein, directly to a person rather than triggering their own immune system to make many antibodies as vaccines do," the authors explain.

READ MORE: [Preventative Shot for Lyme Disease Enters Clinical Trial](#)

Studies by MassBiologics demonstrated that Lyme PrEP provides immediate protection upon injection.

"We identified the single antibody that led to immunity and tested it in animals where it proved 100 percent effective," writes Klempner.

The goals for the Phase I clinical trial are to test for the safety of Lyme PrEP and to determine how long it lasts in the bloodstream in humans, he explains.

A crucial question remains, as well. **Will the monoclonal antibodies be affordable?** As the 2015 NBC News article pointed out, "They are often very expensive, costing upwards of \$100,000 a year."

"The university's goal is to make it available cheaply," explains Klempner.

Monoclonal antibody treatment discussed in 2015

The possible treatment was discussed in an NBC News article entitled [Lyme Disease Treatment Would Prevent Infection, Researchers Say](#) in 2015.

Dr. Mark Klempner, of the University of Massachusetts' nonprofit vaccine development arm, MassBiologics, describes a study where lab-developed monoclonal antibodies were able to prevent Lyme disease in mice.

Klempner's group presented their findings, claiming the monoclonal antibody could protect mice against the *Borrelia* bacteria, during a meeting with infectious disease experts in San Diego, California. [2] More details on the study should be available once it is published in a peer-reviewed journal.

Monoclonal antibodies vs. vaccines

Researchers say study brings “promising results” for new approach in preventing infections from Lyme disease agent.

Klempner explained the difference between monoclonal antibodies and vaccines to NBC News. “The way a vaccine works is that you give people pieces of the bacteria or the virus that you are interested in preventing and then the body mounts a big immune response.”

Monoclonal antibodies, however, are not vaccines “but an approach that builds on the gamma globulin shots that were once frequently used to try to prevent tuberculosis and hepatitis.” The monoclonal shot offers immediate immunity but must be injected every year.

Lyme vaccine removed from market

The NBC News piece summarized concerns with the Lyme disease vaccine, “There once was a human Lyme disease vaccine on the market, but its maker, GlaxoSmithKline, stopped making it after rumors about its safety and multiple lawsuits filed by people claiming it made them sick. The company said it couldn’t sell enough doses to make it worthwhile.”

The vaccine to prevent Lyme disease was removed from the market in 2002. The CDC website warns, “Protection provided by this vaccine diminishes over time. Therefore, if you received the Lyme disease vaccine before 2002, you are probably no longer protected against Lyme disease.” [3]

Klempner finds the mouse study encouraging. He tells NBC News, “the company is laying the groundwork now to start testing its monoclonal antibody in people next year.”

The investigators at MassBiologics will need, however, to address several questions:

- Will the monoclonal antibodies work for the growing number of strains of the infection?
- Will the monoclonal antibodies work for new species, e.g. *Borrelia miyamotoi*, which is related to the bacteria causing tick-borne relapsing fever (TBRF) described by the CDC? [4]
- Will there be monoclonal antibodies for other tick-borne illnesses, e.g. Babesia, Anaplasmosis?
- Will there be any side effects in people not evident in the mice?
- Will the monoclonal antibodies be affordable, as the NBC News article points out, “They are often very expensive, costing upwards of \$100,000 a year.” Klempner says, “the university’s goal is to make it available cheaply.”

Related Articles:

[Lyme disease vaccine for humans: would you trust it?](#)

[Researchers race to develop a vaccine](#)

[Questions linger on the efficacy of the Lyme disease vaccine](#)

References:

1. UMass Medical School. Feb. 24, 2021. Preventative shot for Lyme disease, developed at UMass Medical School, enters clinical trial.
2. Lyme Disease Treatment Would Prevent Infection, Researchers Say, by Maggie Fox at NBCNews.com Available from: <https://www.nbcnews.com/health/health-news/lyme-disease-treatment-would-prevent-infection-researchers-say-n441946>.
3. Lyme disease vaccine, Centers for Disease Control and Prevention, Available from: <https://www.cdc.gov/lyme/prev/vaccine.html>.
4. What you need to know about Borrelia miyamotoi. Centers for Disease Control and Prevention (CDC) Available from: <https://www.cdc.gov/ticks/miyamotoi.html>.

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