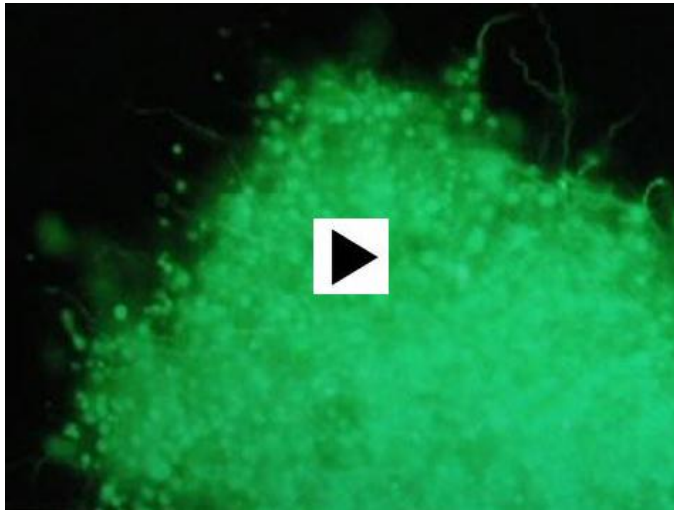


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## What's Under Our Skin? New research on Lyme biofilms

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Posted by: Kris Newby



At the end of [UNDER OUR SKIN](#), Dr. Alan MacDonald presented a revolutionary new hypothesis – that Lyme bacteria are able to shroud their colonies with [protective biofilms](#) – and this may explain why these pathogens can be so difficult to eradicate with short courses of antibiotics. [1]

His collaborator, [Eva Sapi, Ph.D.](#), Associate Professor of Biology and Environmental Science at the University of New Haven, is exploring why and how these biofilms form, in hopes of developing more effective treatments for chronic Lyme sufferers.

[[Click on this video clip to watch a Lyme biofilm colony in action](#). The green fragments on the screen are DNA from *Borrelia burgdorferi* strain B31, fluorescently tagged to glow under the special illumination of a dark field microscope.]

Biofilms are made up of a polymeric jumble of DNA, proteins and polysaccharides. They are known to cause persistent, antibiotic-resistant bacterial infections for a number of reasons. [2] First, the polymeric “slime” protects the bacteria in the center of the medusa-like colony, and the inner organisms often shape-shift into energy-efficient forms that can survive months to years in a dormant state, only to reemerge when the host environment is free of chemical threats. Second, antibiotics typically don’t work as well when bacteria are in a dormant state.

Dr. Sapi’s lab is currently trying to identify [the chemical messaging that the bacteria use to trigger the formation of a biofilm](#), with hopes of preventing the formation of this antibiotic-resistant matrix. And she is testing a variety of enzymes and techniques for breaking up existing

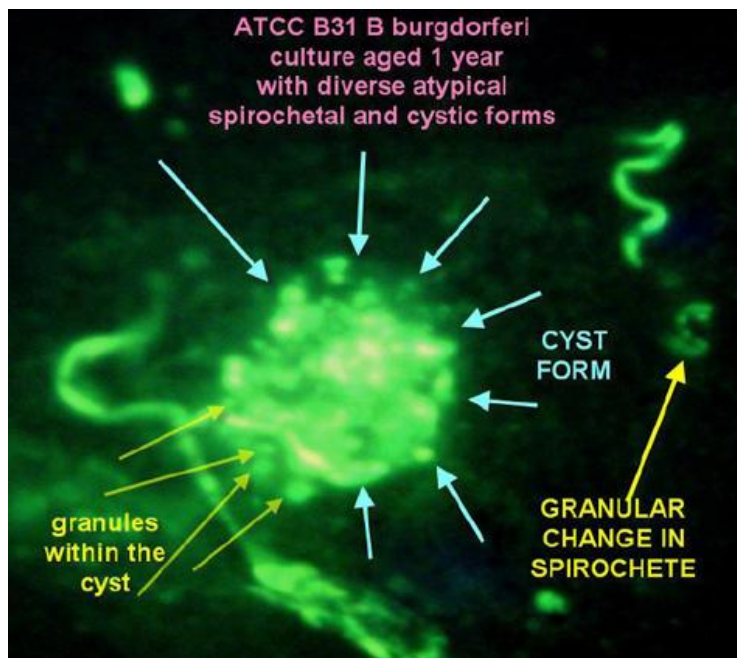
biofilms. In addition, her preliminary research has found that that Lyme biofilms are comprised of an abundance of calcium crystals, which she thinks could cause some of the joint irritation experienced by many Lyme patients.

Medical professionals and researchers who want to learn more about Lyme biofilms can join Dr. Sapi at the Lyme Research Workshop that will be held at the [MediTenth Annual Scientific Session: 21st Century Lyme Disease Treatment](#), October 24-25, 2009 in National Harbor, Maryland 20745.

The California Lyme Disease Association (CALDA) [will reimburse up to \\$500.00 out-of-pocket expenses](#) for any actively practicing MD, DO, ND, NP or PA (in any state) who wants to attend this conference. This offer is also available for the [Lyme Disease Association \(LDA\) conference](#), which is held the day before this conference at the same location. CALDA grants are limited and are only available to those qualifying professionals who are attending the conferences for the first time.

To read more about Dr. Sapi's research, visit her website at:

[http://www.newhaven.edu/unhtoday/archive/UNH\\_09172007/pages/faculty\\_profile.html](http://www.newhaven.edu/unhtoday/archive/UNH_09172007/pages/faculty_profile.html)



[1] Sapi E, MacDonald, A. Biofilms of *Borrelia burgdorferi* in Chronic Cutaneous Borreliosis. *Am J Clin Pathol* 2008; 129:000-000.

[2] Costerton JW, Stewart PS, Greenberg EP. Bacterial biofilms: a common cause of persistent infections. *Science* 1999;284:1318-1322.