



## Top 100 Stories of 2010 #58: The 13 Faces of Lyme

by Pamela Weintraub

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Lyme disease, the most prevalent tickborne infection in the United States, can vary greatly from one person to the next. The hallmark is said to be a bull's-eye rash, yet the rash can take other shapes or not appear at all. Some patients suffer nerve damage, others heart block or swollen joints. Almost 20 percent report a flu-like condition marked by myalgia, arthralgia, and fatigue. Intensity veers wildly too: In one patient symptoms may be barely discernible; in another so incapacitating that life is derailed.

Now the reason for this inconsistency is becoming clear. In October a team of scientists published the sequences of the genomes of 13 strains of *Borrelia burgdorferi*, the bacterium that causes Lyme disease. "Different strains have different capacity to cause disease," explains infectious-diseases physician Benjamin Luft of the State University of New York at Stony Brook. "We now have a more complete picture of the pathogen and the genes that may be related to the disease."

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For patients the payoff could be great. Scientists have had to develop diagnostic tests and vaccines without information from the genomes. But now "the approach can be reset using the bacterial and human genomic data," says immunologist Steven Schutzer of the University of Medicine and Dentistry of New Jersey. "For instance, diagnostic tests could be tailored to different strains or stages of the disease," and vaccines could be designed to skirt interaction with the human body.

These results, along with imaging technologies that capture pathogens in the living host, form a "scaffold" for future research into Lyme disease, says Joseph Breen, bacteriology program officer at the National Institute of Allergy and Infectious Diseases, which funded the work.

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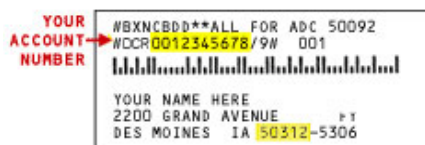
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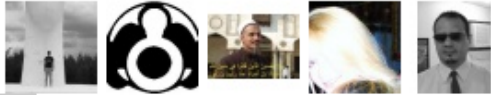


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