

Charles Pavia, Ph.D.

Associate Professor of Microbiology, Dept of Biomedical Sciences; Course coordinator of Microbiology & DPC Facilitator

Doctorate in Microbiology (1977) from Univ. of North Carolina Medical School, Chapel Hill

Postdoctoral work at University of California, San Francisco Medical Center (from 1977-80), & at Walter Reed Army Medical Center, Washington, DC (from 1980-82)

Research Interests:

Lyme disease is caused by a unique spirochetal bacterium called *Borrelia burgdorferi*. It is spread to humans by the bites of tiny deer ticks and is the most common arthropod-borne illness in North America and is most prevalent along the coastal regions of the northeastern parts of the United States. It is also commonly found in certain parts of Western Europe, especially in Austria, Germany and Sweden (where it was first recognized nearly 100 years ago). Fortunately, this infectious illness is readily treatable with antibiotics such as penicillin and tetracycline (or doxycycline). Controversy does exist, however, over the adequacy of antibiotic treatment, as well as the minimal amount needed to effectively cure the infection.

In order to address these issues, my laboratory, in collaboration with others, has become interested in evaluating whether shorter antibiotic-treatment regimens are just as effective as those currently recommended for patients afflicted with Lyme disease. Using an animal-infection model for Lyme disease, our studies revealed that less antibiotic, when compared to a more standard dose, could cure *B. burgdorferi*-infected mice. Such results may lead to improved therapeutic, diagnostic and preventive measures for this disease, including more specific dosing of infected patients without compromising their long range health status.

Additional research interests in my laboratory include analyzing the immune parameters associated with protection against Lyme disease, investigating the epidemiology of zoonotic and environmentally associated infections, and evaluating the potential antimicrobial activity of unique biologically active metabolites found in cruciferous vegetables (members of the broccoli family).

Recent Publications:

1. Pavia CS, Inchiosa MA, and Wormser GP. 2002. Efficacy of short course ceftriaxone therapy for *Borrelia burgdorferi* infection in C3H mice. *Antimicrob. Agents Chemother.* 46:132-134.
2. Pavia CS, Harris CM, and Kavanagh M. 2002. Impaired bactericidal activity and host resistance to *Listeria monocytogenes* and *Borrelia burgdorferi* in rats administered an acute oral regimen of ethanol. *Clin. Diagn. Lab. Immunol.* 9:282-286.
3. Pavia CS. 2003. Current and novel therapies for Lyme disease. *Expert Opin. Invest. Drugs* 12:1003-1016.
4. Pavia CS. 2003. The Lyme disease controversies continue. *Expert Opin. Invest. Drugs* 12:1615-1620.

5. Pavia CS, LaMothe M, and Kavanagh M. 2004. Influence of alcohol on antimicrobial immunity. *Biomed. Pharmacol.* 58:84-89.

Dr. Pavia's most recent research-related accomplishments for 2005-2006:

1. Pavia CS, Longton N, Chiao JW. Antimicrobial activity of Sulforaphane (SFN) against a spectrum of bacteria and fungi. Poster presentation at: *The 46th Interscience Conference on Antimicrobial Agents & Chemotherapy*, San Francisco, Ca, Sept.2006; Abstract #F2-511.
2. Pavia C, Madison G, Agüero-Rosenfeld M, Wormser G. A case of babesiosis in a 68-year-old man living in a non-endemic area. Poster presentation at: *The 11th International Congress of Parasitology*, Glasgow, Scotland, August 2006. Abstract #B4.86.
3. Pavia C, Liveris S, Bittker S. PCR and culture correlate well for measuring cure rates for short course treatment of infections with the Lyme disease spirochete. Poster presentation at: *The 16th European Congress of Clinical Microbiology and Infectious Diseases*, Nice, France, April 2006. Abstract #P1146.
4. Pavia C, Bittker S, Cooper D. The use of a modified version of BSK media for the growth and maintenance of *Borrelia burgdorferi*. Poster presentation at: *The 10th International Conference on Lyme Borreliosis and other Tick-Borne Diseases*, Vienna, Austria, September 2005. Abstract #P146.