



University News Service

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Researchers Determine the Genetic Blueprint of the Lyme Disease Microbe

Genetic Findings Could Advance Efforts to Diagnose, Prevent and Treat Lyme Disease

Researchers Dr. Steven E. Schutzer of UMDNJ-New Jersey Medical School and Dr. Claire M. Fraser-Liggett of the Institute for Genome Sciences, University of Maryland, and their collaborators have made a major achievement toward better understanding Lyme disease, by determining the complete genetic structures of 13 strains of the bacteria that cause the disease.

These new discoveries may accelerate research efforts to diagnose, prevent and treat the disease, which can affect the nervous system, heart, skin and joints. The occurrence of the disease has grown dramatically over the past ten years in the United States and Europe. The research, which was funded by the National Institutes of Health, has been published [online ahead of print](#) in the *Journal of Bacteriology*.

Dr. Schutzer said, "A driving force for doing this project was the observation that certain forms of the bacteria can be more invasive than others. We wanted to find out why and how to identify this property".

New insights into Lyme disease are needed. While the bacterium that causes the disease has been known for 27 years, there still is no vaccine for humans available. The authors believe that their sequence information will help investigators design improved diagnostic tests and vaccines. Efficient tests are needed because the telltale rash on the skin does not always appear in infected patients. Cultures, which work well for many other bacteria, take too long to be of immediate use for Lyme bacteria.

Co-author Dr. Benjamin Luft of the Department of Medicine, Stony Brook University-New York, stated, "The field has been bogged down with an incomplete blueprint of the bacteria. With this new blueprint we can now build new tests and treatments."

Dr. Fraser-Liggett said, “We believe solutions for many of the problems associated with Lyme disease will come from scientific information, beginning with comparative genomics of this organism. Sequencing is a superb discovery tool with greatest impact when coupled with additional biology experiments.”

The research team included Dr. Steven Schutzer of the University of Medicine and Dentistry of New Jersey-New Jersey Medical School; Dr. Claire Fraser-Liggett and Dr. Emmanuel Mongodin of the Institute for Genome Sciences, University of Maryland; Dr. Sherwood Casjens of the Department of Pathology, University of Utah Medical School; Dr. Wei-Gang Qiu of the Department of Biological Sciences, Hunter College of the City University of New York; Dr. John J. Dunn of Brookhaven National Laboratory; and Dr. Benjamin Luft of the Department of Medicine, Stony Brook University-New York.

To arrange an interview with Dr. Steven E. Schutzer, please contact Rob Forman, UMDNJ Chief of News Services, at 973-972-7276 or formanra@umdnj.edu

The University of Medicine and Dentistry of New Jersey (UMDNJ) is the nation's largest free-standing public health sciences university with more than 6,000 students attending the state's three medical schools, its only dental school, a graduate school of biomedical sciences, a school of health related professions, a school of nursing and its only school of public health on five campuses. Annually, there are more than two million patient visits at UMDNJ facilities and faculty practices at campuses in Newark, New Brunswick/Piscataway, Scotch Plains, Camden and Stratford. UMDNJ operates University Hospital, a Level I Trauma Center in Newark, and University Behavioral HealthCare, which provides a continuum of healthcare services with multiple locations throughout the state.

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