CLINICAL AND IMMUNOLOGIC EVIDENCE FOR TRANSMISSION OF LYME DISEASE THROUGH INTIMATE HUMAN CONTACT. RB Stricker,¹* DH Moore,² EE Winger³, ¹Department of Medicine and ²Geraldine Brush Cancer Research Institute, California Pacific Medical Center, San Francisco, CA; and ³Laboratory Corporation of America, San Leandro, CA.

Background: Lyme disease is a tickborne infection caused by the spirochete Borrelia burgdorferi. Recent epidemiologic and experimental evidence suggests that Lyme disease may be transmitted by intimate human contact without a tickbite (Harvey & Salvato, Med Hypotheses 2003;60:742). To assess this possibility, we examined clinical and immunologic features of heterosexual couples with chronic Lyme disease. Methods: Forty-two heterosexual couples with chronic Lyme disease were included in the study. In all couples, both partners had serologic evidence of infection with Borrelia burgdorferi. In 17 couples, each partner had a documented tickbite (concordant for tickbite), while in 25 couples, only one partner had a documented tickbite (discordant for tickbite). All couples were sexually active and did not use condoms. Clinical symptoms of Lyme disease were assessed using a four-point Lyme Disease Symptom Scale (0=none, 1=mild, 2=moderate, 3=severe). CD3(-)CD57(+) natural killer (NK) cells were measured by flow cytometry at the initial evaluation of each individual, as previously described (Stricker & Winger, Immunol Lett 2001;76:43). Results: The study subjects ranged in age from 32 to 83 years (mean, 49 years). In couples that were concordant for tickbite, each partner had a similar symptom score, although symptoms were worse in the index partner who initially sought medical attention (mean, 2.82±0.53 vs. 2.24±0.75, P=0.0132). In contrast, couples that were discordant for tickbite had significantly discordant symptom scores (mean, 2.92±0.28 vs. 0.28±0.54, P<0.0001). In each of the discordant couples, the partner with a tickbite had a worse symptom score than the partner without a tickbite. In couples that were concordant for tickbite, the initial level of CD57 NK cells was similar for each partner (mean, 59±55 cells/ul vs. 52±40 cells/ul, P=NS; normal range 60-360 cells/ul). In contrast, couples that were discordant for tickbite were significantly discordant for the initial CD57 NK level (mean, 57±36 vs. 142±118, P=0.0023). In 23 of 25 couples, the partner with the tickbite had a worse CD57 NK level than the partner without a tickbite. Conclusions: Couples with chronic Lyme disease and discordant histories of tickbite show significant differences in symptom scores and CD57 NK levels compared to couples with concordant histories of tickbite. These findings suggest that Lyme disease may be transmitted by intimate human contact.