SERONEGATIVE LYME DISEASE

1. Recent infection before immune response
2. Antibodies are in immune complexes
3. Spirochete encapsulated by host tissue (i.e.: lymphocytic cell walls)
4. Spirochete is deep in host tissue (i.e.: fibroblasts, neurons, etc.)
5. Blebs in body fluid, no whole organisms needed for PCR
6. No spirochetes in body fluid on day of test
7. Genetic heterogeneity (300 strains, 100 in U.S.)
8. Antigenic variability
9. Surface antigens change with temperature
10. Utilization of host protease instead of microbial protease
11. Spirochete in dormancy phase (L-form) with no cell walls
12. Recent antibiotic treatment
13. Recent anti-inflammatory treatment
14. Concomitant infection with babesia may cause immunosuppression
15. Other causes of immunosuppression
16. Lab with poor technical capability for Lyme disease
17. Lab tests not standardized for late stage disease
18. Lab tests labeled "for investigational use only"
19. CDC criteria is epidemiological not a diagnostic criteria
20. Lack of standardized control
21. Most controls use only a few strains as reference point
22. Few organisms are sometimes present
23. Encapsulated by glycoprotein "S-layer" which impairs immune recognition
24. "S"- layer binds to IgM
25. Immune deficiency
26. Possible down regulation of immune system by cytokines
27. Revised W.B. criteria fails to include most significant antigens