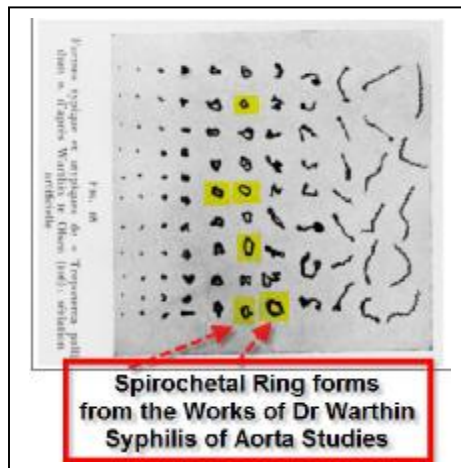
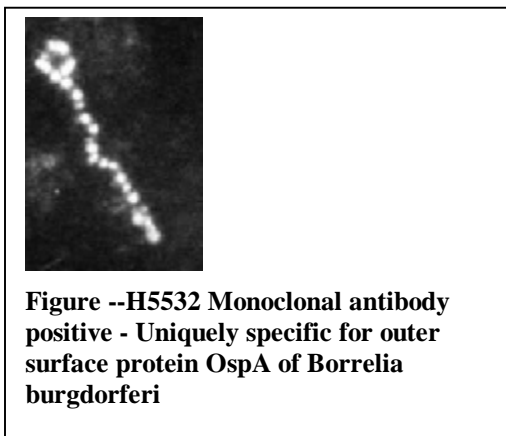
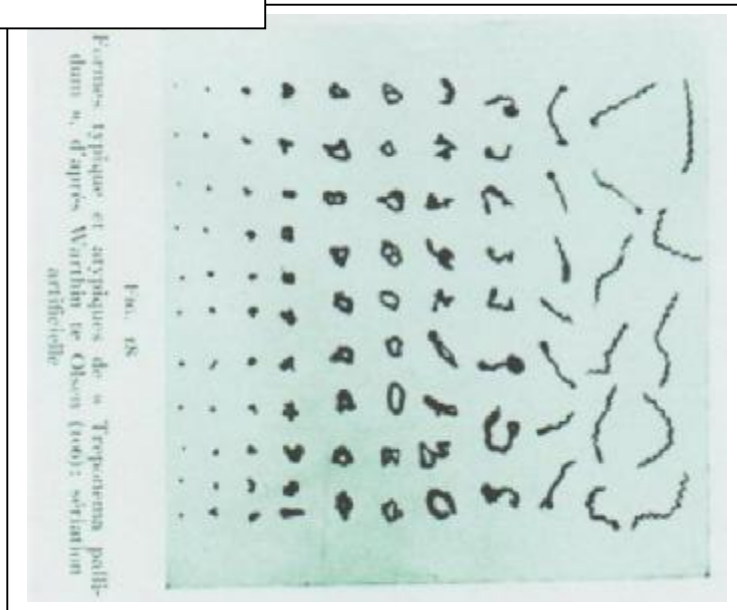
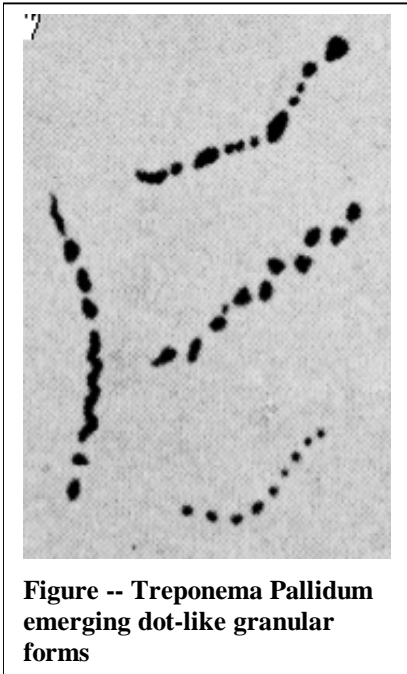
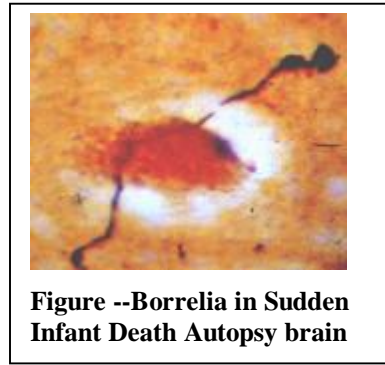


# Examples of diverse morphologies for Pathogenic Spirochetes : Borrelia burgdorferi forms – Alan B. MacDonald M.D.

Compare with Dr. Warthin's Grid of T. Pallidum profiles



# Diverse Spirochetal Morphologies – Alan B. MacDonald, M.D.



Figure --Aged Culture of *Borrelia burgdorferi* ATCC B31 strain showing straightened spirochetes

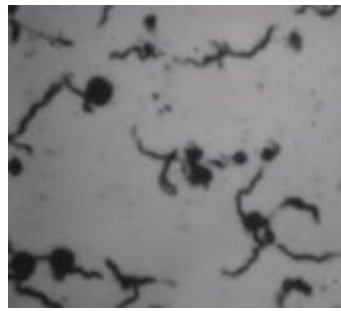


Figure --*Borrelia burgdorferi* strain B31 in culture - variable corkscrew, straightened, and cystic forms



Figure -- *Borrelia* spirochetes stained with Barbour monoclonal H9742 - *Borrelia* Flagellin specific -Fetal death in utero



Figure --Sudden Infant Death Autopsy brain - Straightened form (Non coiled) of *Borrelia*

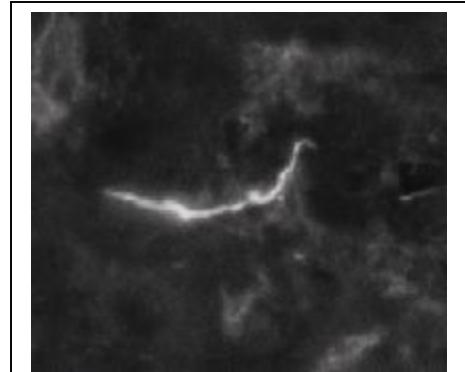
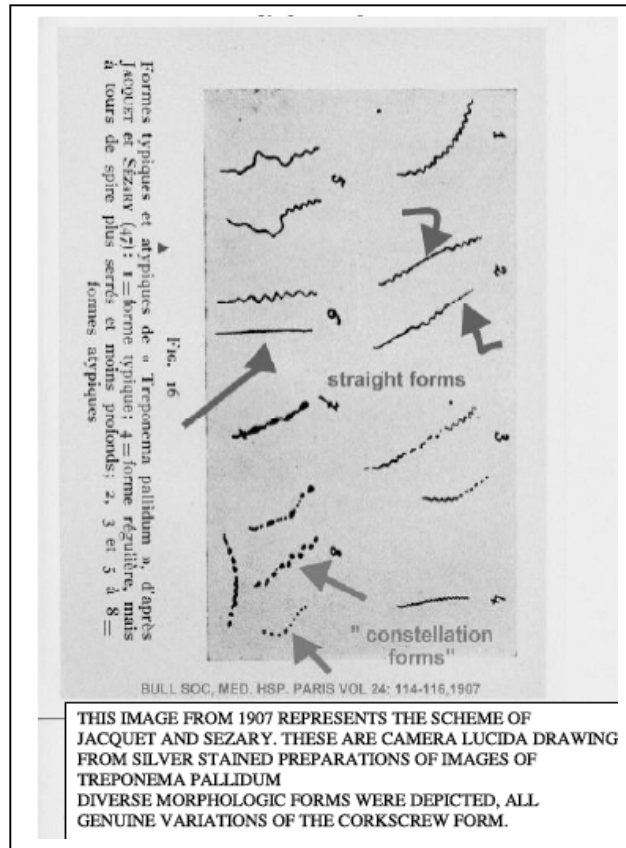
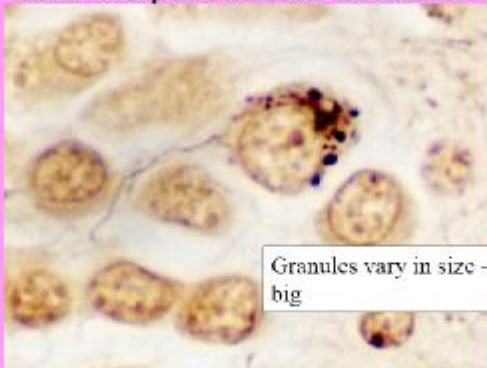
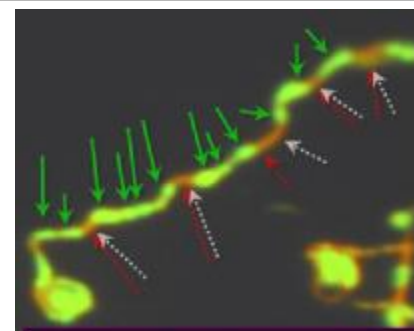


Figure --*Borrelia* in Hamster Autopsy tissue- Experimental infection - H5332 MAB for OspA protein

Alzheimer's with GVB and ? Spirochetal form at 9 o'clock



Granules vary in size – from little to big



*Borrelia burgdorferi*  
Distribution of DNA (Green) and RNA (red) inside the cylinder of the spirochete

Diverse Spirochetal Morphologies – Alan B. MacDonald, M.D.

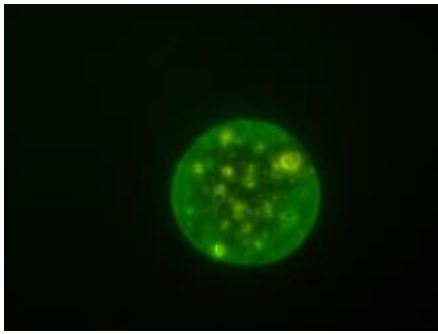


Figure --Cystic form of *Borrelia burgdorferi* grown in culture from spinal fluid after 16 months of incubation in patient with positive Western Blots in Spinal Fluid and Serum

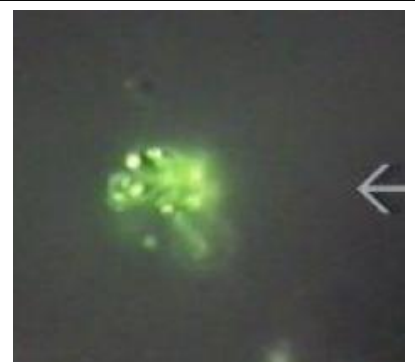


Figure --Cystic form of *Borrelia burgdorferi* from Alzheimer Disease fresh brain imprint - Stained with H9724 Monoclonal antibody



Figure --Evolution of Cystic borrelia from culture of Reference strain of *Borrelia burgdorferi* strain B31

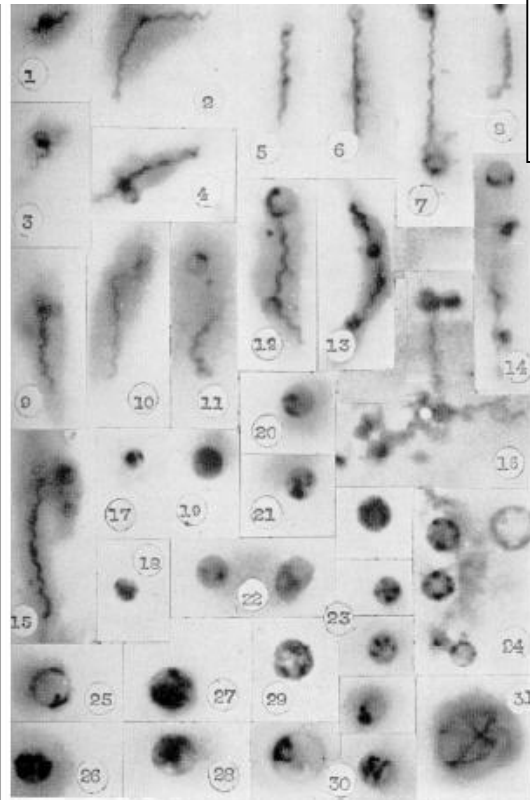


Figure 18 Montage of Cystic spirochetal forms: derived from *Treponemal* spirochetes, from Dr Edward Delamater and colleagues, 1950

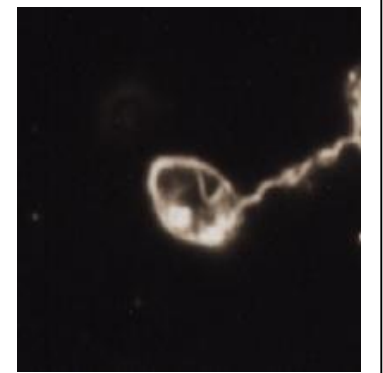


Figure --Cystic spirochetal from emerging from B31 stain of *Borrelia burgdorferi* in culture



Cyst forms emerging from cylinder

**Borrelia Burgdorferi b31 Reference Strain**

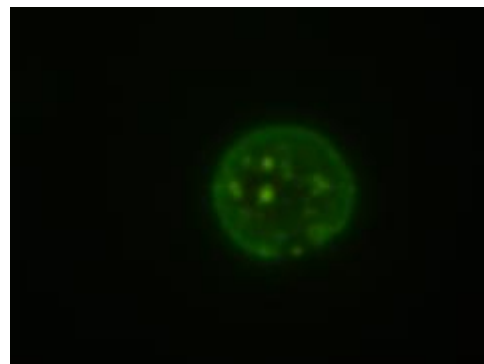


Figure -- Cystic *Borrelia burgdorferi* cultured from Spinal Fluid - Patient with Positive Lyme Western blot in Spinal fluid with Intrathecal antibody production