



Figure 1 Borrelia burgdorferi Strain B31 in culture with cystic profiles



Figure 2 Cystic Borrelia - monoclonal Antibody H9724 (Barbour) from Imprint of Alzheimer's Disease autopsy brain tissue- note the internal granules and filaments

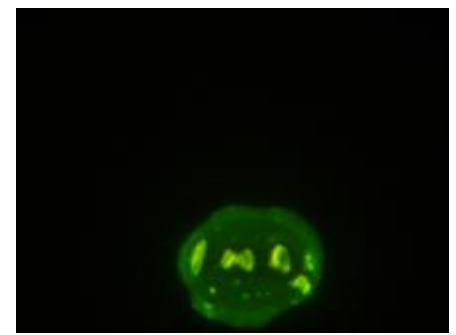


Figure 3 Cystic Borrelia burgdorferi - Culture of Cerebrospinal fluid from human with positive Western Blot study demonstrating intrathecal synthesis of borrelia antibodies

CYSTIC BORRELIA IN ALZHEIMER'S DISEASE AND IN NON-DEMENTIA NEUROBORRELIOSIS
 Topic: *Neuropathology*
 Presentation Time: Tuesday, 1:30 p.m. - 3:45 p.m.
 Alan B. MacDonald M.D.,
 St Catherine of Siena Medical Center,
 Smithtown, NY, USA.
 Contact e-mail: inmacdonald@yahoo.com
 Presentation Number: P3-197
 Keyword: bacteria, cell cultures, early detection

ST. CATHERINE OF SIENA Medical Center
 A MEMBER OF CATHOLIC HEALTH SERVICES OF LONG ISLAND

TURN THE CORNER FOUNDATION

ATCC B31 B burgdorferi culture aged 4 years with diverse cytoplasm, adrochetal and cyclic filaments.

GRANULES WITHIN THE CYST

CYST FORM

GRANULAR CHANGE IN SPIROCHETE

CYSTIC FORM OF BORRELIA ATTACHED TO CONVENTIONAL FORM

Cystic Borrelia - Neuroborreliosis Spinal fluid - No dementia

Cystic Borrelia - Alzheimer's tissue

CYTOLOGY MONOLAYER
 Brain Frontal Lobe Alzheimer's
 Monoclonal Antibody H9724
 CYST FORM - BORRELIA

DOUBLE STAIN
 ACRIDINE SYTOX B

CYSTIC SPIROCHETE

NUCLEUS

IN SITU DNA HYBRIDIZATION
 ALZHEIMER'S HIPPOCAMPUS
 BORRELIA DNA (FLAGELLIN)
 BBO 0147

Website
<http://www.molecularalzheimer.org>

Figure 4- Poster presentation July 2006 ICAD Madrid Alzheimer's conference – demonstrating cystic Borrelia From spinal fluid cultures and cystic Borrelia invading Hippocampal neurons in Alzheimer disease autopsy tissue, and In Situ DNA hybridization of Alzheimer brain tissue with BBO 0147 DNA (flagellin B) in Alzheimer's disease Autopsy brain tissue from a patient who had multiple Spinal fluids positive for Borrelia burgdorferi Antibodies at Stony Brook SUNY School of Medicine 8 years before death- Autopsy verified Alzheimer's disease at Stony Brook in 2005

**IN SITU DNA HYBRIDIZATION
STUDY OF GRANULOVACUOLAR
DEGENERATION IN HUMAN
AUTOPSY HIPPOCAMPAL NEURONS
FOR FLAGELLIN B
TRANSCRIPTOMES OF
*BORRELIA BURGENDORFERI***
Topic: Molecular Mechanisms of
Neurodegeneration Others
Presentations Time: Sunday, 11:30 a.m. - 3:45 p.m.
Alan R. MacDonald, El Collège de St-Joseph Med Ctr, Reddick Ave, NY,
USA. Contact: e-mail: alan.macdonald@schollers.com
Presentation Number: P1-272
Keyword: In situ hybridization, neuropathology,
cell death



- Conclusions:**
1. DNA is present in the Granulovacuolar Hippocampal lesions of Alzheimer's Disease.
 2. Annealing of Spirochetal DNA to the Granulovacuolar lesions implicates Borrelia infection (Neuroborreliosis) in a Group of Alzheimer Disease patients.



Figure 1-Poster presentation July 2006 ICAD Madrid Alzheimer's Disease Conference demonstrating connections between Granular forms of Borrelia and Granules inside of Alzheimer's disease hippocampal neurons (GVB)

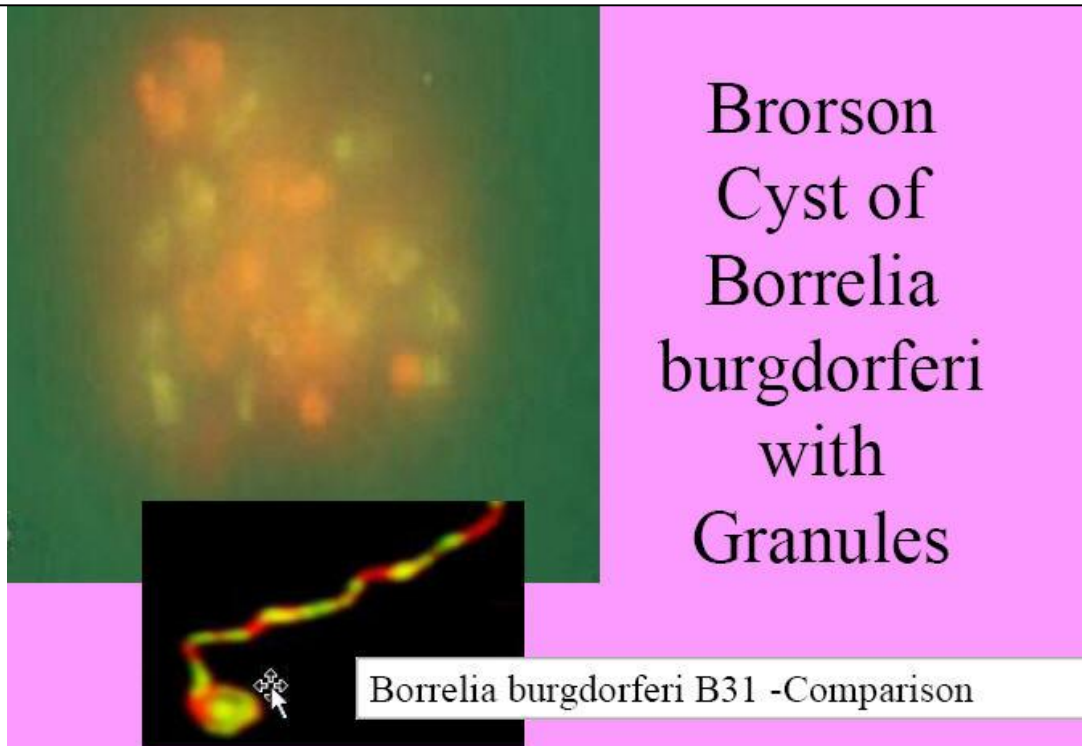


Figure 2 Borrelia cystic forms with internal granules from the work of Dr Oystein Brorson and comparison of Borrelia burgdorferi with segmented DNA/RNA demonstrated by acridine orange staining (MacDonald)

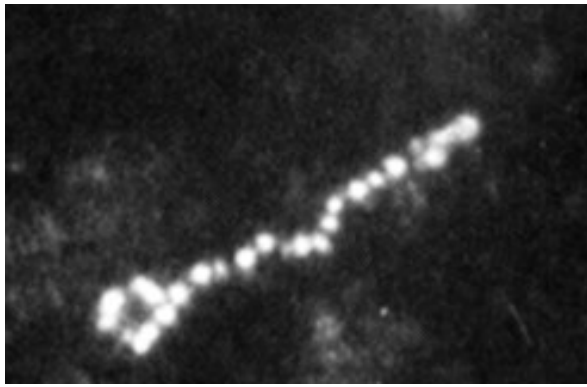


Figure 7- Segmented *Borrelia burgdorferi* stained with Murine monoclonal antibody H5332 (Barbour) - image from fingerprint monolayer cytology imprint from Alzheimer Disease autopsy brain tissue (MacDonald). Please compare this image with the line drawings of Jacquet and Sezary from Year 1907 – *Treponema pallidum* evolving to segmented granular forms – Chancre fluid

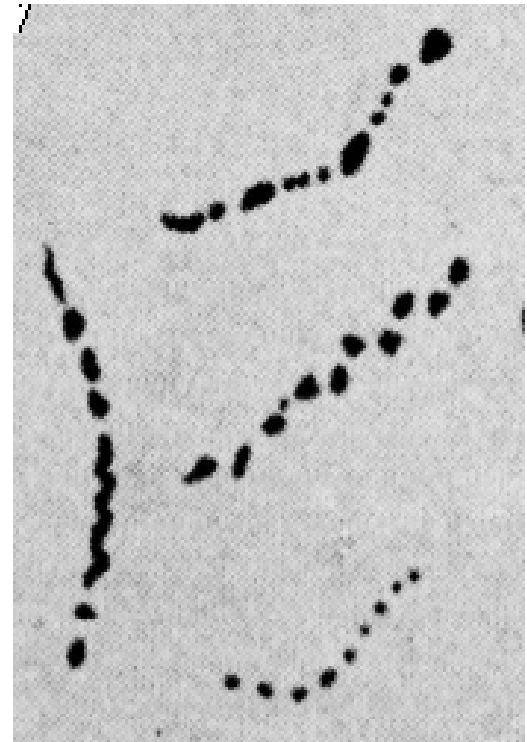


Figure 8-*Treponema Pallidum* - line drawings - Year 1907- Jacquet and Sezary

Note : the little dots are not all the same size.

Note: the similarity of the “dots” of *Treponema pallidum* with the “dots” of *Borrelia burgdorferi* in the Acridine orange stained preparation Figure 9

Segments- some with DNA
some with Rna

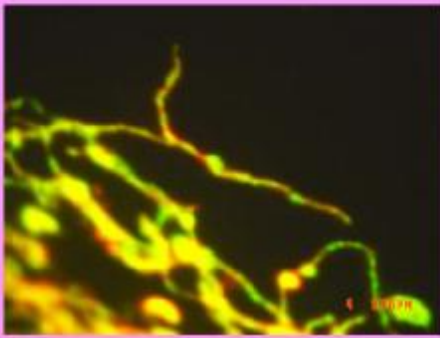
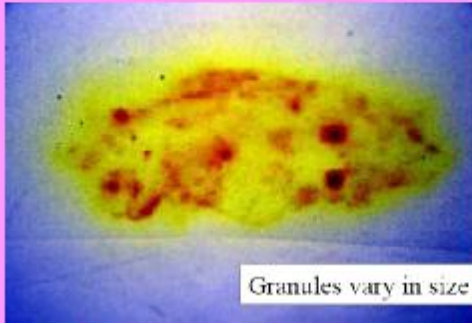


Figure 3- *Borrelia burgdorferi* Strain B31 - Acridine orange stain - note the segmentation of DNA (yellow green) and RNA (Orange)

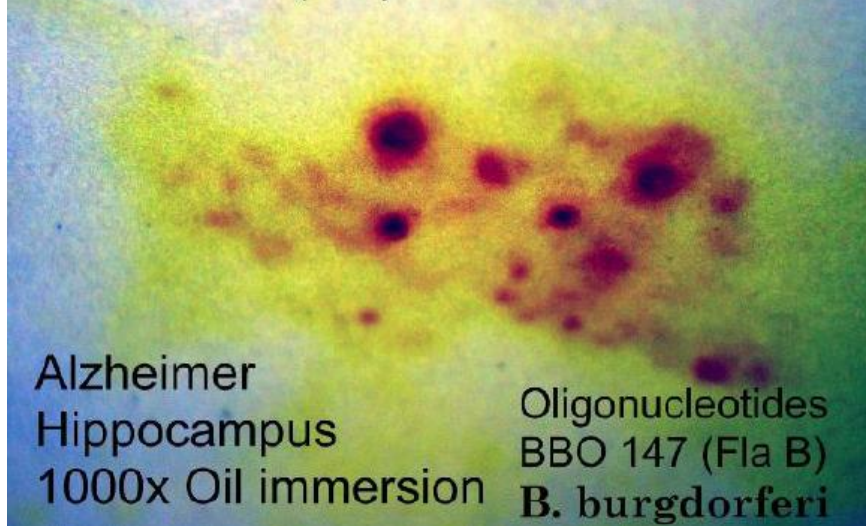
Human Alzheimer
In situ DNA hybridization for
Borrelia burgdorferi DNA



Granules vary in size – from little to big

Figure 4- Granular elements containing DNA of *Borrelia burgdorferi* inside of Alzheimer's disease hippocampal neurons by In Situ DNA Hybridization

In Situ DNA hybridization
Alexa Fluor (red) Fluorochrome



Alzheimer
Hippocampus
1000x Oil immersion
Oligonucleotides
BBO 147 (Fla B)
B. burgdorferi

Figure 5- In situ DNA Hybridization for *Borrelia burgdorferi* DNA (Flagellin ORF bbo 0147) -- Alzheimer's disease neuron from hippocampus shows discrete cytoplasmic "round" granular signals- Note that not all of the granules are the same size- This is similar to the granule profiles in Jacquet and Sezary's 1907 Line drawings from *Treponema pallidum* in chancre fluid.

Borrelia burgd. In transformation to granular forms

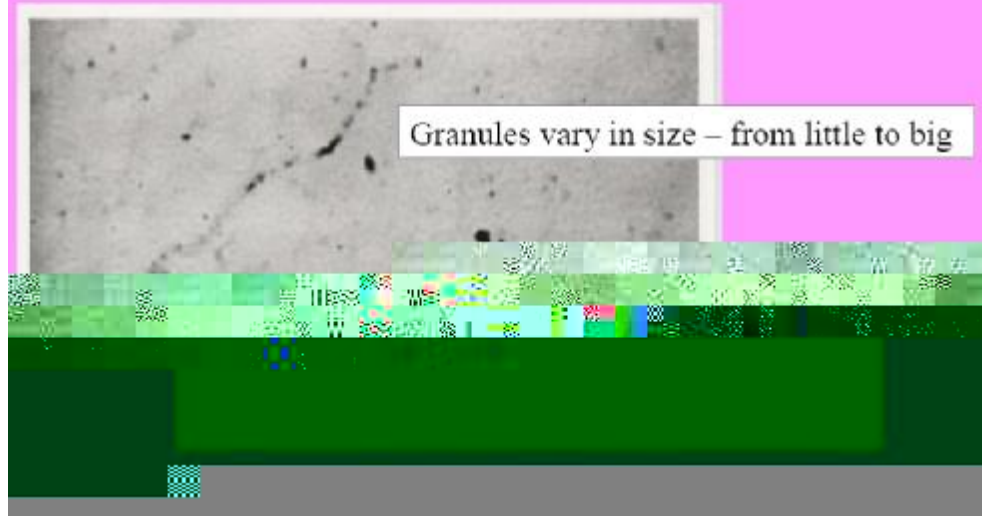


Figure 6- Aged Culture of *Borrelia burgdorferi* (Strain b31) Stained with Warthin Starry Silver Stain) - demonstrating the evolution of segments in the spirochetal cylinder