This image from 1907 represents the scheme of Jacquet and Sezary. These are camera lucida drawings from silver stained preparations of images of Treponema pallidum. Diverse morphologic forms were depicted, all genuine variations of the corkscrew form.

"Constellation" and "straight forms" are my annotations in English.

(I suspect that Sezary and Jacquet noted these profiles in Chancre preps)

Alan MacDonald MD   New York   September 2004
Diverse Morphologic Spirochetal Profiles: In vivo and In vitro Observations
Analysis of Spirochetal Heiroglyphics
Alan B. MacDonald, MD Copyright All rights reserved 2004

PARTIAL FRAGMENTATION OF TREPONEMA PALLIDUM (JACQUET AND SEZARY 1907)

COMPLETE FRAGMENTATION OF T.PALLIDUM,
(leading to an array of “dots”, which when reconnected, reproduce the contour of the “classic” corkscrew shaped spirochete)
I favor this dot-like array as the mechanism for the “granular” form Of T. Pallidum (A.MacDonald,MD)

Indirect immunofluorescence of a fresh autopsy Brain imprint, (analogous to the FBI fingerprint used in police Work). The fresh brain slice is rolled across a glass slide, without “smudging the print”, is fixed in Alcohol, and Layered with a monoclonal murine antibody to the spirochetal Epitope, incubated in a moist chamber for 30 minutes, washed In PBS, and layered with fluorescein ant mime antibody, Incubated for 30 min, washed, layered with nonfluorescent aqueous mounting media, coverslipped, and examined with Epifluorescence at 1000x using oil immersion with an objective outfitted with a correction ring, and photographed. I have seen this only once in my career.
AlanMacDonald MD
Autopsy
Frontal Lobe
Year 1986
Monoclonal Ab (murine)
H5332

Please “connect the dots”
To view this as a
Form of the spirochete
From which it originated
Alan
MacDonald, MD

Control images from
Jacquet and Sezary 1907

“comma” shaped forms
were called LOOP
FORMS
By Rose and Morton in
their 1951 Paper
“The Morphologic
Variation of Treponema”

“Formes Atypique” were
depicted by Schoen and
Sanchis-Bayarri”
Fig. 16

Formes typiques et atypiques de Treponema pallidum, d'après Jacquet et Szary (47). 1 = forme typique; 4 = forme régulière, mais à tours de spire plus serrés et moins prononcés; 2, 3 et 5 à 8 = "constellation forms."

Comparison - Alzheimer hippocampus BSK culture - with Aged B. Burgdorferi B31 Aged culture, Page 2

ALZHEIMER'S DISEASE HIPPOCAMPUS CULTURE
AUTOPSY BRAIN - BSK MEDIUM - PROLONGED CULTURE
SPIROCHETES - LATER STAGE - LARGER CALIBER
AND NOT ATTACHED TO ROUNDED BODIES
DIVERSE MORPHOLOGIC SPIROCHETAL PROFILES: IN VIVO AND IN VITRO OBSERVATIONS
ANALYSIS OF SPIROCHETAL HEIROGLYPHICS
ALAN B. MACDONALD, MD  COPYRIGHT  ALL RIGHTS RESERVED 2004

BORRELLA BURGDORFERI - REFERENCE STRAIN
B31 - AGED CULTURE - BSK MEDIUM
SMALL THIN NONMOTILE SPIROCHETAL FORMS
("STRESS FORMS") ATTACHED TO ROUNDED BODY

DIMINUTIVE SPIROCHETES WITH VARIOUS SHOWING APICAL ROUNDED BODIES, AND STRAIGHTENED FORMS, AND SOME JOINED TO THICKER MORE CONVENTIONAL SPIROCHETAL FORMS

Dr. P. Seguin
circa 1907
Paris, France
Formes typique et atypiques de Treponema pallidum, d’après Warthin e Olsen (106): sérigraphie
Diverse Morphologic Spirochetal Profiles: In vivo and In vitro Observations
Analysis of Spirochetal Heiroglyphics
Alan B. MacDonald, MD  Copyright All rights reserved 2004

Darkfield
Alzheimer autopsy
brain BSK cultured
Spirochetes 1986

Non motile forms in
A group
(In 1986, nonmotile
forms of borrelia were
no accepted as
“legitimate”.
In 2004,
Nonmotile B.
burgdorferi Are
Legitimate forms
under the category of
“stress altered” forms
of PreacMursic
/Wilske
or under the category
of Flagellin-less
forms of Barbour and
Charon

Alan MacDonald, MD
2004

Alan G. Barbour’s original B. burgdorferi isolate B31
Yale Journal of Biology and Medicine
Phase Contrast Image

Spirochetes in a group ( “so called brood colony” or “tangle”)

I think that some rounded bodies are associated with these spirochetes/

Alan MacDonald MD  2004
B. burgdorferi from the ATCC grown in BSK II
And allowed to “age” for 6 months
Show atypical forms, including diminutive forms
Which may be attached to parent forms.
Diminutive forms are always non motile
Alan MacDonald MD  2004

Diminutive forms attached to conventional or
Attached to atypical spirochetal forms were
Published by Dr. P Seguin
In his studies of experimental Treponemal
Infection in the lapin and
In studies of secondary and gummatous
Syphilis in the human host

Alan MacDonald, MD  2004
Aged cultures of B. Burgdorferi from the ATCC grown in BSK II for 6 months to One year show loss of motility and emergence Of rounded bodies (gemma, “Stress Altered forms”, “cyst forms”)
In some cases, a small diminutive nonmotile Form emerges from the rounded body.
These observations recapitulate the Classic studies of Edward D. DeLamater, MD and colleagues in the series of papers which commenced in 1949 – 1950.
(Original Legend from DeLamater, ED et al, Studies on the Life Cycle of Spirochetes, VII, The Life Cycle of the Kazan Nonpathogenic Treponema Pallidum in Culture,
Figs 5 to 7: Photo 280. Eleven day old slide culture. Photos No. 228. Three Day old slide culture made from 11 day culture. Photo No. 282. Twelve day old culture showing stages in the unipolar emergence of spiral forms from Unispirochetal cysts (x4,850)