

A hundred years ago, the discovery of *Treponema pallidum** *Há 100 anos, a descoberta do Treponema pallidum**

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Abstract: The discovery of *Treponema pallidum* by Schaudinn & Hoffmann, on March 3rd 1905, was influenced by Siegel's communication on the finding of the etiological agent of syphilis. John Siegel, working at the Institut of Zoology, University of Berlin, claimed to have found a flagellate protozoon in syphilitic lesions. Because of the skepticism it was received with, this communication yielded further investigation, conducted by zoologist Schaudinn and dermatologist Hoffmann. They were the first investigators to find the etiological agent of syphilis, described under the name of *Spirochaeta pallida*. The discovery of *Treponema pallidum* on March 3rd 1905 was the first step towards the development of diagnostic and therapeutic procedures in subsequent years.

Keywords: History of Medicine; Syphilis; *Treponema pallidum*

Resumo: A descoberta do *Treponema pallidum* por Schaudinn & Hoffmann em 3 de março de 1905 foi influenciada pela comunicação de Siegel, sobre a descoberta do agente etiológico da sífilis. Encarada com ceticismo, a comunicação acarretou novas investigações, conduzidas pelo zoologista Schaudinn e pelo dermatologista Hoffmann - primeiros observadores do agente da sífilis, denominado *Spirochaeta pallida*. A descoberta foi o passo inicial para o desenvolvimento dos procedimentos diagnósticos e terapêuticos nos anos subsequentes.

Palavras-chave: História da Medicina; Sífilis; *Treponema pallidum*

A hundred years ago, the etiological agent of syphilis was identified by Fritz Richard Schaudinn, born in Röseningken, East Prussia, on September 19th 1871, who studied zoology at the Friedrich-Wilhelm Universität and died in Hamburg on July 22nd 1906. In February 2nd 1905, zoologist Franz Eilhard Schulze reported to the Royal Prussian Academy of Sciences that his assistant John Siegel (physician at the Berlin Zoology Institute) had discovered the etiologic agent of syphilis. It was a protozoon which he called *Cytorrhycles luis*. could be held responsible for varicella, hand-foot-mouth disease and scarlatin.

In order to solve the doubts that hovered over the announcement, the director of the Berlin Imperial Health Service invited the Chair Professor of Dermatology at the Charité Syphilis Clinic, Edmund Lesser, to conduct further investigation. Lesser's assistant dermatologist, Paul Erich Hoffmann - born on April 25th 1868 in Witznitz, Pomerania, who studied

medicine at the Berlin Military Academy and died on May 8th 1959 in Bonn -, zoologist Fritz Schaudinn, director of the Laboratory of Protozoans at the Berlin Imperial Health Service, and Fred Neufeld, Koch's disciple, as an expert adviser for bacteriology, were nominated to carry out the study.

On March 3rd 1905, Schaudinn examined a fresh preparation of a material obtained by Hoffman from an eroded papula in the vulva of a woman with secondary syphilis.

The exam was done in a then modern Zeiss microscope with apochromatic objectives, which allowed Schaudinn to observe various very light thin spiraled microorganisms, turning around their largest length and moving back and forth. Schaudinn showed Hoffman and Neufeld this finding, and named it *Spirochaeta pallida*. This organism was demonstrated in various syphilis lesions, on both fresh preparations and Giemsa dyes. These findings were discussed in the Imperial Health Service, and, when making a

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decision about the publication, Neufeld abandoned the group. Schaudinn & Hoffmann published a provisional paper² on the presence of *Spirochaeta pallida* in the secretion of syphilitic papilomas, in the journal of the Imperial Health Service, on April 25th 1905, Hoffman's 37th birthday ("Vorläufiger Bericht über das Vorkommen von Spirochaeten in syphilitischen Krankheitsprodukten und bei Papillomen", *In: Arbeiten aus dem Kaiserlichen Gesundheitsamt, XXII: 527-534; 25 Apr 1905*).² Schaudinn & Hoffmann differentiated the delicate spirochete from the rougher *Spirochaeta refringens* found in mucosas.

On May 17th 1905, Schaudinn & Hoffmann presented their results at the Berlin Medical Society meeting, generating an enormous controversy and skepticism. Many researchers had doubts about the authenticity of the fact, among them Oskar Lassar. Siegel and followers joined the opposing group, advocating *Citorrhynchus luis* as the etiologic agent, arguing that Schaudinn's finding was nothing but dust (artifact). The situation increased in embarrassment as the president of the Berlin Medical Society closed the session by ironically saying: "the session is closed until a new etiologic agent is found for syphilis".

Albert Neisser, a renowned venerologist, wrote a letter doubting the veracity of the discovery, emphasizing his disbelief that *Spirochaeta* was indeed syphilis etiologic agent. However, this disbelief lasted no more than a month, when Neisser recognized Schaudinn's discovery. Hoffmann credited all the glory of discovery to Schaudinn's cleverness, affirming that his own role had been only of collector of the material. Numerous works were published after the discovery, confirming the spirochete and launching a phase of diagnostic and therapeutic consolidation.

Ilya Metschnikow found *Spirochaeta pallida* in ulcers of monkeys inoculated with syphilitic secretions, and Abraham Buschle detected the treponema in the liver and spleen of a child who died because of congenital syphilis, confirming the discovery of Schaudinn & Hoffmann.

In October 14th 1905, Schaudinn wrote a letter to Hoffman proposing to assign *Spirochaeta pallida* to a new genus with the denomination *Treponema pallidum*.

Their research partnership was interrupted by the passing of Schaudinn, in 1906, not before his acknowledgement by all Europe, when he was praised by the very same professors who had contested him.

The greatest acknowledgement and homage to Schaudinn, however, occurred at the International Medicine Meeting in Lisbon. His presence in the conference room led Professor François Hallopeau to stand from the president's chair and ask the audience to rise and applaud him. Schaudinn had barely begun thanking when a new overwhelming applause filled the room.

Schaudinn's misfortune began during his journey back to Germany, when he underwent an urgent surgery aboard due to gastrointestinal amebian abscesses. Such amebian infection had probably been voluntarily acquired when he did research on amebas. Schaudinn was a little under 35 years of age when he died in July 22nd, 1906.

Hoffmann carried on with his work by delivering lectures and occupying the highest university positions in Halle and Bonn. During the Nazi years he lived outside of Germany, but went back to Bonn, where he set up a laboratory. In 1948 and 1949 he published two books, products of his medical life: *Wollen und Schaffen e Ringen um Vollendung*. □

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