100 Years of Chagas Disease: A Continuing Public Health Challenge

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Global Health Histories Seminars
Tropical diseases: lessons from History

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• Chagas disease: the historic and social framing of a scientific-medical object and a social object

• ‘The disease of Brazil’: symbol of a ‘diseased country’ and of the science that would ‘redeem’ it

• Local dimension of tropical medicine in Brazil
The beginning of a ‘new century’: science as a key element of progress

1900: creation of the bacteriological Institute of Manguinhos (Oswaldo Cruz Institute)

1903: Oswaldo Cruz’s campaigns to fight yellow fever, smallpox and bubonic plague in Rio de Janeiro,

1897-1903: Carlos Chagas’ course at Rio de Janeiro Medical School.

Works of the urban renewal of Rio de Janeiro (1902-1906)
Photo: Augusto Malta.

Central Avenue: symbol of the ‘modern’ capital.
Museu Histórico Nacional Archives.

Carlos Chagas’ MD thesis on haematological aspects of malaria, 1903. Picture of patient’s blood sample.
COC Archives
Carlos Chagas’ training in malaria (1905-1908)

- June 1907: Chagas was appointed to fight a malaria epidemic that halted the extension works of Central do Brazil Railway in Northern Minas Gerais.

Chagas (the second on the left) at a building of the Central do Brazil Railway in Lassance

COC Archives.

Central do Brazil Railway train. 1907
Source: Gerdodetti, Cornejo (2005).
The discovery of the *Trypanosoma cruzi* (1908)

Carlos Chagas (the first on the left side) and engineers in Lassance. On this occasion he was informed of the existence of the *barbeiros* (kissing bugs) in the rural huts of the region. COC Archives.

Pictures of the *barbeiro* and of the evolutive stages of *T. cruzi*. Published by Chagas in 1909 in *Memórias do Instituto Oswaldo Cruz* journal.
The discovery of a new tropical disease (April 14, 1909): a ‘great feat’ of Brazilian science

Carlos Chagas tending Rita, one of the first acute cases studied in Lassance.
For many years this girl was considered to be Berenice, the first case of the new trypanosomiasis

Schaudinn Prize diploma, bestowed on Carlos Chagas by the Hamburg Institute for Tropical Diseases, Germany. Hamburg, June 22, 1912
The first studies in the 1910s

- Clinical picture: acute and chronic phases; endocrine, neurological and cardiac disturbances
- Endemic goiter as main clinical sign of the disease and of its vast extension in the country

Chagas at his laboratory at the Oswaldo Cruz Institute

A sufferer of goiter, considered to be a case of Chagas disease

Chagas' collaborator Gaspar Vianna published histopathological data on the new trypanosomiasis in 1911 in *Memórias do Instituto Oswaldo Cruz* journal.
The discovery of an unknown and poor country: rural Brazil at the national debate

- A disease deeply linked to poverty in the Brazilian hinterlands
- Tropical medicine in Brazil: science for the benefit of the national progress

Sick people at a hut typical of rural areas in Brazil
COC Archives.

The ‘discovery’ of the sertanejos (people from the hinterlands).
Source: O Malho magazine, 1919.
Controversies

• 1915/1916, Argentine: criticism about the correlation with endemic goiter and the geographic spread of the disease
• Chagas’ reply: endemic goiter as an issue open to discussion; new emphasis on the cardiac aspects
• 1922-1923, Brazil: polemics at the National Academy of Medicine
• Scientific doubts, nationalistic debate, personal rivalries
• An epoch of uncertainties...

The impact in the press. ‘The debates of science’, *A Noite* newspaper, 1923

Chagas at the Oswaldo Cruz Institute with the National Academy of Medicine’s commission charged to evaluate his studies, 1923
1930s: Salvador Mazza and the research in Argentina

Salvador Mazza (first on the left side) at the 9th Meeting of the Argentinean Society of Regional Pathology in Mendoza, 1935. The Brazilians Emmanuel Dias and Evandro Chagas were present at the event.

Cecilio Romaña, E. Dias and João Carlos Pinto Dias

The Romaña’s sign

COC Archives.
The continuity of research in Brazil after Chagas’ death (1934)

Emmanuel Dias (1908-1962) and Evandro Chagas (1905-1940), the main disciples to continue researches on Chagas disease at Manguinhos from the 1930s on COC Archives.
The Bambuí post: a critical contribution for the scientific and social recognition of the disease

- A new clinical picture: the chronic chagasic cardiopathy as the principal clinical manifestation of the disease
- The search for a prevention method: the gamexane (BHC) to fight the *barbeiros*
- 1950: the first campaign with insecticides in dwellings (Uberaba)

E. Dias tending a resident in Bambuí

E. Dias spraying insecticide in a dwelling in Bambuí
The alliance with the physicians from the hinterlands: the development of Central Brazil

7th Meeting of the ‘Central Brazil Congresses’. Uberlândia, Minas Gerais, 1955.
Chagas disease was one of the main themes discussed at those meetings. On the second line, Joffre Rezende (the first on the left), who proposed the digestive form of Chagas disease.

Courtesy Dr. Joffre Rezende.

The medical journal of Goiania, created in 1955.
We see the map of the state of Goiás and the site where the new country’s capital Brasília was being built.
The mobilization of Latin-American physicians and international organisations

Distribution of Chagas disease in the Americas. Map elaborated by Emmanuel Dias, 1954

Letter from E. Dias to Carlos A. Alvarado (Pan-American Sanitary Bureau) claiming on a program to eradicate triatomines from the Americas. Bambuí, 1957

Medal of the First International Congress on Chagas Disease. Rio de Janeiro, 1959

COC Archives.
New paths for combating the disease

Published in Dias (2007).

Fumigation of insecticide against the *barbeiros* within the National Program of Chagas Disease Control (initiated in the 1980s). Mato Verde (MG), 2007
Courtesy Dr. Liléia Diotaiuti.
New paths for research: the institutionalization of a scientific community

The Annual Meetings on Chagas Disease. Zigman Brener (standing), and, among the presents, Carlos Morel, Wanderley de Souza, Lain Pontes de Carvalho, Ruth Nussenzweig
Zigman Brener Archive.

3rd Meeting of the TDR Experts Committee on Chagas Disease Epidemiology. Geneva, 1980. From the left, sitting: Arquimedes Canese (Paraguay), Aluizio Prata (Brazil), Rolando Sifontes Ferrer (Venezuela), Gill Thring (Secretary). Standing: José Rodrigues Coura (Brazil), Benjamin Gilbert (Brazil), Robert Tonn (OSP, Washington), Peter de Raadt (WHO, Geneva), Álvaro Moncayo (Colombia), Hugo Schenone (Chile) and Hugo Lumbreras (Peru)
Courtesy Dr. Álvaro Moncayo.

The Trypanosomatid Genome project.
Science, 15 July 2005
Courtesy Dr. Carlos Morel.
New challenges in the 21th century

The disease in the Amazon region: cases of vectorial transmission outside of the home, by means of human entry into forests and contact with wild triatomines, as occurs with *Rhodnius brethesi* in the case of extraction activities relating to the *piaçava* palm tree. Courtesy Dr. José Rodrigues Coura.

The need for treatment.
DNDi poster.
Source: http://www.treatchagas.org/
Eyes on the future

Children of Lassance, 2009
Photo: Simone Kropf
Some lessons from history

- Science: innovative knowledge / solutions for social problems
- 100 years of Chagas disease: a collective process undertaken inside and outside laboratory

Science and society

Carlos Chagas’ microscope

Residents in rural area in the state of Rio de Janeiro. 1920s.
Past and present: no more *barbeiros*, mas still the poverty...

Hut in Lassance, 2009
Photo: Simone Kropf.
Thank you!

Children from Lassance showing their school work: miniatures of houses made of recycled materials. Lassance, 2009
Photo: Simone Kropf