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## Title: Plant Trypanosomes (*Phytomonas Sp.*) as a Model for Research on Human Trypanosomatidae

Dr. Michel Dollet\*, Betina Porcel, Nancy Sturm, Clotilde Marin, Patrick Bastien, David Campbell, France Denoeud, and Patrick Wincker

Director of Research CIRAD France

## Abstract

Trypanosomatidae infect a large variety of hosts including insects, animals and humans. They are responsible for sleeping sickness and Chagas disease, and Leishmania species cause visceral and cutaneous manifestations. They also occur in plants. This broad group is responsible for severe diseases in Latin America, in coffee, coconut and oil palm. We obtained their first in vitro culture and using isoenzyme electrophoresis, RAPD and different molecular markers, we revealed at least 10 groups designated from A to J. Pathogenic group H is associated with wilts in Latin America and forms a monophyletic group with distinct biological, serological and molecular characteristics. Group D contains latex isolates from Europe, Africa and India. In 2009 we defined the complete molecular karvotypes of isolates from groups D and H. Group H has seven chromosomes, versus 21 in the group D. Despite these differences, most of the genes are in fact common to both. The comparison with other sequenced trypanosome genomes showed that *Phytomonas* spp. have a highly streamlined genome encoding for a minimal metabolic system enhanced by enzymes specialized for using plant sugars as energy sources. We observed a dramatic reduction in genome size (8 Mb versus the 32 Mb relative to its closest neighbor Leishmania). Significant synteny was observed between Phytomonas and Leishmania major. For obvious reasons the in vitro culture of Phytomonas is safer for the researcher than that of human Trypanosomatidae, thus the plant trypanosomes are excellent models for trypanosomatid research with implications in the fight against trypanosomiasis and leishmaniasis.

## Biography

Michel Dollet is Director of Research at CIRAD, Montpellier. He got his University thesis in Virology at Strasbourg University, and his State Thesis at University Montpellier2. He started working on diseases of tropical plants in Côte d'Ivoire, and moved to INRA / CNRS in Saint Christol Lez Ales, France. He opened a virology unit in Montpellier in 1980. In 1998 / 1999 he worked at UCLA, California. M. Dollet discovered the trypanosomes associated with a wilt of oil palm in Peru. His unit obtained the first *in vitro* culture of plant trypanosomes and they identified the insect vector. He obtained 3 consecutive EEC projects allowing development of search in all aspects of trypanosomes diseases in Latin America, with several partners in Europe, Russia, the USA and Latin America. Currently Dr. Dollet's researches focus on the genome of plant trypanosomes. He also conducts expertise on diseases of unknown etiology (recently in Sri Lanka, Papua New Guinea, the Caribbean). Past decade he conducted research on phytoplasmas, causal agent of diebacks in plants.