



PROJECT TITLE	Functional genomics of Rhipicephalus bursa and Babesia ovis interactions towards disease control – Ref ^a . PTDC/CVT-EPI/4339/2012
BRIEF DESCRIPTION	Ticks are the most important vectors of disease-causing pathogens in domestic and wild animals, representing a major threat to animal and human health having great impact on the economy regarding to livestock industry. Babesiosis is one of the most important diseases transmitted by ticks with a world-wide distribution affecting many species of mammals with a major impact on cattle and man. This project concerns the functional genomics of Rhipicephalus bursa and Babesia ovis interactions aiming disease control being our main targets genes differentially expressed after infection.
OBJECTIVES	The main goal of the project concerns the functional genomics of Rhipicephalus bursa and Babesia ovis interactions aiming disease control. The project aims to select potential vaccine candidates among the differentially expressed genes required for successful pathogen infection, development and transmission. Specific objectives will be: 1. The first step concerns to the production of R. bursa infected with B. ovis and non-infected tick populations that will be used for total RNA extraction. 2. RNA sequencing and data analysis will allow comparing two populations of ticks and the identification of genes differentially expressed in the B. ovis infected population. These analyses will be carried on in order to: 2.1 obtain a catalogue of tick genes differentially expressed in response to parasite infection. 2.2 identify up- and down-regulated genes in the infected population. 3. After expression confirmation by Real Time RT-PCR, genes considered interesting will be further studied by gene silencing using RNA interference. 4. Antigens found to be involved in the transmission of the parasite will be further expressed in a recombinant system.
IMPLEMENTATION	The innovation of this project lies on the conjugation of different strategies and in the fact that this will be the first project on functional characterization studies of tick genes expressed in response to pathogen infection involving Rhipicephalus bursa and Babesia ovis. New potential vaccine candidates will be the outputs of the project. These studies will contribute to improve control measures to reduce small ruminants tick populations and tick-borne diseases.
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DURATION	2013-2015
PRINCIPAL INVESTIGATOR	Ana Domingos (GHTM/IHMT)



INSTITUTO DE HIGIENE E
MEDICINA TROPICAL
DESDE 1902



UNIVERSIDADE
NOVA
DE LISBOA

**RESEARCH TEAM /
INSTITUTION**

Instituto de Higiene e Medicina Tropical/ Global Health and Tropical Medicine (Coordinator Institution), Portugal: Virgílio do Rosário, Joana Ferrolho;

Instituto Nacional de Saúde Dr. Ricardo Jorge/ Centro de Estudos de Vectors de Doenças Infecciosas (INSA/CEVDI), Portugal: Ana Santos, M^a Margarida Silva;

Universidad de Castilla-La Mancha/ Instituto de Investigación de Recursos Cinegéticos (UCLM/IREC), Portugal: José Fuente, José Lastra, Margarida Rayo;