PROJECT TITLE	Let´s make them fall: A genomic, proteomic and immuno-histologic approach on the involution of tick aggregation cement – Refª. PTDC/CVT-EPI/3460/2012
BRIEF DESCRIPTION	Ticks are obligate ectoparasites found in nearly all regions of the world. Control of ticks and tick-borne diseases of livestock depends almost exclusively on the use of acaricides inducing a widespread occurrence of tick resistance and also environmental damages. Tick feeding and pathogen transmission are facilitated by molecules secreted in tick saliva known to enhance infection with a variety of pathogens. The discovery of novel proteins and genes expressed in salivary glands has been accomplished by approaches involving proteomics and functional genomics. However, the study of the cement degradation process allowing phase changes of tick life cycle is, to our knowledge, still to be accomplished. The project aims to study cement protein content in several conditions aiming tick and tick-borne diseases control.
OBJECTIVES	This study will include: 1. Evaluation of gene differential expression during cement evolution (on salivary glands) and selection of genes considered as potential vaccine candidates using subtractive hybridization and gene silencing (RNA interference) techniques; 2. Study of the profile of tick cement protein composition differences during the tick/host attachment and detachment periods, allowing for the identification of molecules related to, or inducing, the fall of the parasite, through Two-Dimensional Electrophoresis (2DE) and Mass Spectrometry; 3. the evaluation of bovine local immune response to two different ticks as well as to characterize histological changes during tick fixation and detachment processes in cattle so as to search for possible immune or inflammatory mechanisms anticipating tick detachment.
IMPLEMENTION	The interpretation and integration of outputs will allow the delivering of relevant insight information on genomic, proteomic and tick/host adhesion site immune-inflammatory processes leading to the identification of mechanism inducing tick detachment from the host. Thus providing the information for the synthesis/selection of molecules able to inhibit tick/host attachment or to facilitate an early detachment altering the cement aggregation complex function
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DURATION	2013-2015
PRINCIPAL INVESTIGATOR	Luís Granger Alfaro Cardoso (PI) (FMV/ULisboa); Ana Domingos (IHMT/GHTM);

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