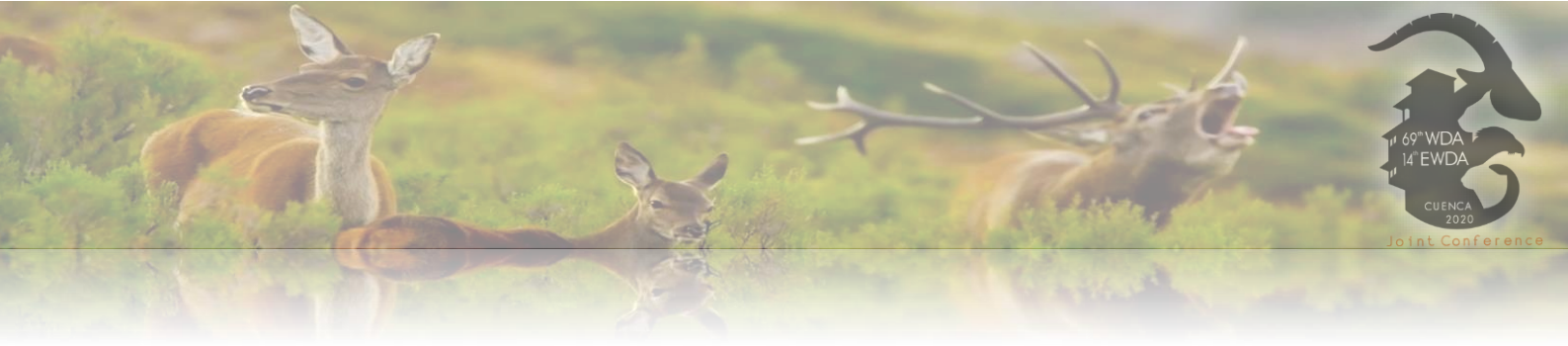

Mimicking early host-*Batrachochytrium salamandrivorans* interactions using in *vitro*-infection models

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Abstract

Worldwide, chytridiomycosis has caused catastrophic amphibian die-offs and it is considered as one of the worst infectious diseases among vertebrates in recorded history. Two chytrid species, *Batrachochytrium dendrobatidis* (*Bd*) [1] and *Batrachochytrium salamandrivorans* (*Bsal*) [2], have been identified as the etiological agents of chytridiomycosis. Both pathogens parasitize amphibians by colonizing the keratinized layers (*stratum corneum*), resulting in disturbance of skin functioning and possibly leading to death in these animal. Whereas *Bsal* induces the formation of skin ulcera [2], *Bd* typically induces epidermal hyperplasia and hyperkeratosis, eventually leading to the loss of physiological homeostasis [3-4].

The early *Bd*-infection steps have been described as attraction to a suitable host, attachment of zoospores to the host skin, zoospore germination, germ tube development and penetration into the skin cells, leading to endobiotic growth of this pathogen inside host cells which eventually results in the loss of host cytoplasm [5-6]. As germ tube development has been described for *Bsal* [2], invasion and spread in the host epidermis is generally assumed to be germ tube mediated, following the same pattern as *Bd*. However, this has never been investigated and a thorough knowledge of the early infection dynamics of *Bsal* is crucial in understanding the disease pathogenesis.

We here present a cell-based assay that mimics the early colonization stages of *Bsal*. Using the continuous A6 cell line we established a fluorescent *in vitro* model that mimics attachment, invasion and intracellular maturation of *Bsal* to and in host cells. The availability of a cell-based assay that allows rapid and efficient screening of the early host-*Bsal* interactions opens new perspectives in chytrid research.

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