

**Occurrence, Distribution and Characterisation of African Swine Fever Virus (ASFV)
in the Tick *Ornithodoros porcinus* in the Kruger National Park**

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African Swine Fever (ASF) is a lethal, highly infectious viral disease of domestic pigs, often characterized by widespread haemorrhage, morbidity and mortality of 100%. The causal agent is a DNA virus, ASF virus (ASFV) of the Asfarviridae family. The transmission cycle involves wild vertebrate hosts such as bushpigs (*Potamochoerus porcus*) and mainly warthogs (*Phacochoerus aethiopicus*), but also an invertebrate host, the soft tick *Ornithodoros porcinus porcinus* from the *Ornithodoros moubata* complex. This tick inhabits warthogs' burrows. The epidemiology of the disease, the potentially ravaging effect on pig populations and crossing international boundaries, as well as the lack of an effective vaccine or treatment make ASF a considerable international interest.

A study was conducted in the Kruger National Park, South Africa, during the 2002 dry season and the 2003 rainy season in order to, firstly, assess the presence of ASFV in *Ornithodoros* tampans collected from warthog burrows and, secondly, to determine the different virus genotypes present in the park using PCR techniques in order to establish a regional context. It was the first time that a comparison between data from dry and the rainy seasons was conducted in the invertebrate host in southern Africa.

The infestation rate of the burrows was significantly higher during the rainy season than during the dry season. In addition, there was a significant difference in the number of female ticks, with a higher number of females during the rainy season. It must be noted that female ticks usually have a higher infection rates of ASFV than males due to a combination of the increasing size of blood meals at successive feedings and the ability of infected male ticks to transmit the virus to females during copulation.

A total infection rate in the adult ticks for ASFV was 2.70% and 0.86% for the dry and rainy season, respectively. Although the prevalence of ASF in ticks is higher during the dry season, this was not statistically significant. Infection rates reported in South Africa varied from 0.06% in Mkuze Game Reserve to 0.3-1.6% (with a particular value of 1.4% in the KNP in the 1980s, the last study conducted there).

Concerning the phylogenetic analyses, at least three different ASFV genotypes occur in the Kruger National Park. The relatedness between field isolates is a useful epidemiological tool. Indeed, in the case of any outbreak it is possible to identify the genotype responsible and to target the origin in order to implement sanitation measures as fast as possible.

This pilot study was the first step of a multiple-stage project on epidemiological, molecular and evolutionary aspects of ASF. Indeed, it is crucial for the growing pig industry to have a clear picture of the ASF situation in wildlife areas and bordering farming zones.