**Abstract**

Onchocercosis by *Onchocerca lupi* is regarded as an emerging zoonosis. The infestation is reported primarily in symptomatic dogs. Of 107 animals sampled in Greece and Portugal, 9 (8.4%) scored positive by cytology. Genetic make-up of specimens collected from distinct animal populations showed differences in specimens from Portugal compared to all those available.

Zoonotic cases of onchocercosis have been worldwide attributed to species primarily infesting cattle (*Onchocerca gutturosa*) (**Orihel and Eberhard, 1998**) (*1*), horse(*Onchocerca* *cervicalis*) (**Burr** **et al., 1998)** (*2*), the European deer (*Onchocerca jakutensis*) (**Koehsler et al., 2007**) (*3*), and wild boar (*Onchocerca* *dewittei* *japonica*) (**Uni et al., 2010**) (*4*). In their definitive hosts, all the above species localize in the subcutaneous tissues, muscular fasciae or cervical ligaments, whereas in humans *O. gutturosa* and *O. cervicalis* presented an ocular localization (**Uni et al., 2010; Sréter and Széll, 2008; Eberhard et al., 2013**) (*4-6*).

*Onchocerca lupi* is a neglected parasite causing nodular lesions associated with acute or chronic ocular disease (i.e., conjunctivitis, ocular swelling, photophobia, lacrimation, discharge, exophthalmia) in dogs (**Sréter and Széll, 2008)** (*5*). The zoonotic role of this filarioid has been previously suspected (**Sréter et al., 2002**) (*7*), but only recently demonstrated in one patient from Turkey (**Otranto et al., 2011)** (*8*).Remarkably, human ocular cases are increasingly being reported worldwide, including in Iran (**Mowlavi et al., 2013**) (*9*), Turkey, Tunisia (**Otranto et al., 2012**) (*10*), and the United States, where *O. lupi* was diagnosed about the rachidian channel (**Eberhard et al., 2013**) (*6*).

Since its first description in a Caucasian wolf (*Canis lupus*) from Georgia (**Rodonaja, 1967**) (*11*), *O. lupi* remained almost unknown for decades until being reported in dogs from southern (Greece, Portugal) and central (Germany, Hungary) Europe (**Széll et al., 2001; Komnenou et al., 2002**; **Faìsca et al., 2010; Hermosilla et al., 2005)** **(Figure 1A)** (*12*-*15*). In western United States,cases of canine onchocercosis (**Orihel et al., 1991; Gardiner et al., 1993; Heberhard et al., 2000; Zarfoss et al., 2005**)(*16***-***19*) were attributed to species parasitizing other hosts (i.e., cattle, horse or wild ungulates) but they were probablycaused by *O. lupi*, as recently confirmed both morphologically and molecularly in two cats (**Labelle et al., 2011**) (*20*) and four dogs (**Labelle et al., 2012)** (*21*).

Many aspects of the biology and ecology of *O. lupi* remain unknown to science and knowledge of its actual distribution, limited to a few case reports. An epidemiological survey was conducted to estimate the occurrence of *O. lupi* in dog populations from areas Greece and Portugal where a single (**Faìsca et al., 2010**) (*15*) or multiple (**Komneanou et al., 2002**) (*13*) cases, respectively, were previously reported. The genetic make-up of the specimens collected from both canine populations was assessed by comparing them with those available in GenBank database.