

Study on the prevalence of *Toxoplasma gondii* and *Neospora caninum* and molecular evidence of *Encephalitozoon cuniculi* and *Encephalitozoon (Septata) intestinalis* infections in red foxes (*Vulpes vulpes*) in rural Ireland.

T. Murphy¹, J. Walochnik², A. Hassl², J. Moriarty¹, Jean Mooney¹, D. O'Toolan³, E. Power⁴ and A.O'Loughlin⁵.

¹Central Veterinary Laboratory, Backweston Campus, Celbridge, Co. Kildare, Ireland.

²Department of Medical Parasitology, Medical University of Vienna, Vienna, Austria.

³Regional Veterinary Laboratory, Kilkenny, Ireland.

⁴Regional Veterinary Laboratory, Cork, Ireland

⁵Regional Veterinary Laboratory, Limerick, Ireland.

The scavenging feeding habits of red foxes (*Vulpes vulpes*) results in them being reservoirs for a large number of parasites, many of which are pathogenic to man and animals. These include the economically important zoonotic apicomplexan, *Toxoplasma gondii* and the bovine parasite, *Neospora caninum*. The intracellular microsporidia *Encephalitozoon cuniculi* and *Encephalitozoon (Septata) intestinalis* have emerged recently as opportunistic pathogens of immunocompromised humans. The zoonotic potential of *E. cuniculi* has been documented and it has been shown to infect foxes, however, the transmission of *E. intestinalis* from animals to man remains to be clarified.

A total of 454 foxes distributed throughout Ireland were collected during late winter 2003, for a national survey on *Trichinella spiralis*. From this cohort thoracic fluid and brain tissue was available from 220 and 148 foxes respectively for our study. Thoracic fluid was tested for the presence of antibodies to *T. gondii* and *N. caninum* using an immunofluorescent antibody test. Half the brain was used for histological examination and the remainder was used for PCR analysis for *T. gondii*, *N. caninum* and microsporidian DNA.

The serological prevalence of *T. gondii* and *N. caninum* was 59% and 1% respectively. Pathological changes suggestive of mild parasitic encephalitis were observed in 22% of the animals. PCR analysis of the brains with pathological lesions was negative for *T. gondii* and *N. caninum*. However, microsporidian *ssrRNA* gene DNA was amplified from the brains of two foxes. Sequencing of these amplicons revealed a homology with *E. cuniculi* of greater than 99% in one fox and a similar homology with *E. intestinalis* in the second fox. This is the first report of microsporidian infections in terrestrial wildlife in Ireland.