

Technical University of Denmark



## Microsatellite typing of *Echinococcus multilocularis* from naturally infected Danish and Swedish red foxes (*Vulpes vulpes*)

Wahlström, Helene; Enemark, Heidi; Juremalm, Mikael; Umhang, Gerald; Ågren, Erik; Al-Sabi, Mohammad Nafi Solaiman; Knapp, Jenny

*Publication date:*  
2015

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Wahlström, H., Enemark, H., Juremalm, M., Umhang, G., Ågren, E., Al-Sabi, M. N. S., & Knapp, J. (2015). Microsatellite typing of *Echinococcus multilocularis* from naturally infected Danish and Swedish red foxes (*Vulpes vulpes*). Abstract from 6th Conference of the Scandinavian-Baltic Society for Parasitology (CSBSP6), Uppsala, Sweden.

**DTU Library**  
Technical Information Center of Denmark

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

# MICROSATELLITE TYPING OF *ECHINOCOCCUS MULTILOCULARIS* FROM NATURALLY INFECTED DANISH AND SWEDISH RED FOXES (*VULPES VULPES*)

Wahlström Helene<sup>1\*</sup>, Enemark Heidi<sup>2</sup>, Juremalm Mikael<sup>1</sup>, Umhang Gérald<sup>3</sup>, Ågren Erik<sup>1</sup>, Al-Sabi Mohammad Nafi Solaiman<sup>2</sup>, Knapp Jenny<sup>4</sup>

<sup>1</sup>National Veterinary Institute, Uppsala, Sweden

<sup>2</sup>National Veterinary Institute, Technical University of Denmark, Frederiksberg, Denmark

<sup>3</sup>ANSES, Nancy Laboratory for Rabies and Wildlife, wildlife surveillance and eco-epidemiology unit, Technopôle Agricole et Vétérinaire, B.P. 40009, 54220 Malzéville, France

<sup>4</sup>Department of Chrono-environnement, UMR UFC/CNRS 6249 aff. INRA, University of Franche-Comté, Besançon, France

## Introduction

Fragment size analysis of the EmsB microsatellite marker has been used for genetic fingerprinting of *Echinococcus multilocularis*. In this study we applied this method to Danish and Swedish isolates from foxes. The aim was to gain more knowledge concerning possible recent introduction and potential source(s) of the parasite.

## Materials and Methods

Five to seven *E. multilocularis* from each of 17 red foxes (*Vulpes vulpes*) collected between 2010 and 2014 in Denmark and Sweden were subtyped using the EmsB microsatellite marker. A subtype also present in other European countries was named profile E if found in one, and profile P if found in more than one worm within the study. Subtypes only detected in one worm in the study was named a unique type (U).

## Results

Seventy-four worms were subtyped, 34 worms from seven Swedish foxes from three different areas and 40 worms from 10 Danish foxes from two areas. In Højer (Denmark) profile (P6) dominated but two other types were also present (E1, U1) while two profiles were detected in Grinstedt (P2, P4). In Västra Götaland (Sweden) one profile (P5) was seen, whereas in the other areas variation was larger both within areas and within foxes: Södermanland (P2, P3, E2, U4, U5), Dalarna (P1, P3, U2, U3).

## Conclusion

The majority of subtypes identified in the study have previously been detected in other parts of Europe. It cannot be concluded if or when introduction occurred. However, if *E. multilocularis* was introduced the origin was most probably European.