



**P 55 Genetic characteristics of *Borrelia burgdorferi* sensu lato in the Tyrols**

S.T. Sonnleitner<sup>a,b</sup>, F. Wex<sup>a</sup>, G. Walder<sup>a,b</sup>

<sup>a</sup> Innsbruck Medical University, Dept. of Hygiene, Innsbruck, Austria

<sup>b</sup> Dr. Gernot Walder GmbH, Ausservillgraten, Austria

In the Tyrols, the continental divide delimitates areas with high incidence of borreliosis and TBE in the north with low rates of incidence in the south. The aim of our study was to investigate whether this is influenced by genetic characteristics of the abundant strains of *Borrelia* (*B.*) *burgdorferi* sensu lato.

To determine the prevalence of *Borrelia* in North Tyrol (Austria) and South Tyrol (Italy), 1259 ticks were collected by voluntary hunters, whereas 99.68% of the ticks were *Ixodes* (*I.*) *ricinus* (1255 of 1259), 0.24% belonged to the species *I. trianguliceps* (3 of 1259), and one member of the genus *Ixodes* could not be identified to the species level (0.08%). Investigation of ticks by PCR resulted in identical prevalences of 20% in both parts of the study area. Follow-up sequencing of 46 *Borrelia*-positive ticks yielded a dispersion of 74% *B. afzelii* (34), 10.9% *B. garinii* (5), 6.5% *B. lusitaniae* (3), 6.5% *B. burgdorferi* sensu stricto (3), and 2.2% *B. valaisiana* (1). Amazingly, 44.1% of the sequenced *B. afzelii* were found in nymphs of *I. ricinus*. Among other species, only 17% were detected in nymphs (in detail: 1 *B. garinii* (20%) and 1 *B. burgdorferi* sensu stricto (33%). Phylogeography gives hints that dispersion of *Borrelia* genotypes is rather characterized by distinct vertical clusters in the east and west than following the horizontal course of the continental divide. Dispersion of *B. afzelii* was mainly found in the eastern and southern part of the study area, showing a high overlap of closely related clusters. The meaning of these findings for the differences in seroprevalence requires further investigation.