Infectious keratoconjunctivitis in wild Caprinae species in the Alps

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Infectious keratoconjunctivitis of Caprinae:

- not transmissible to man
- no compulsory disease
- economical impact limited in livestock
- not sexy for animal protectionists,

veterinary state services OIE and WDA

- research not supported by state veterinary services

Is these disease important?????

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Infectious keratoconjunctivitis

- occurrence: worldwide

- animal welfare

- mortality up to 30% in wild Caprinae (impact on population dynamics)

- interaction domestic livestock - wild Caprinae (human dimension)

For the animals, the disease is important!

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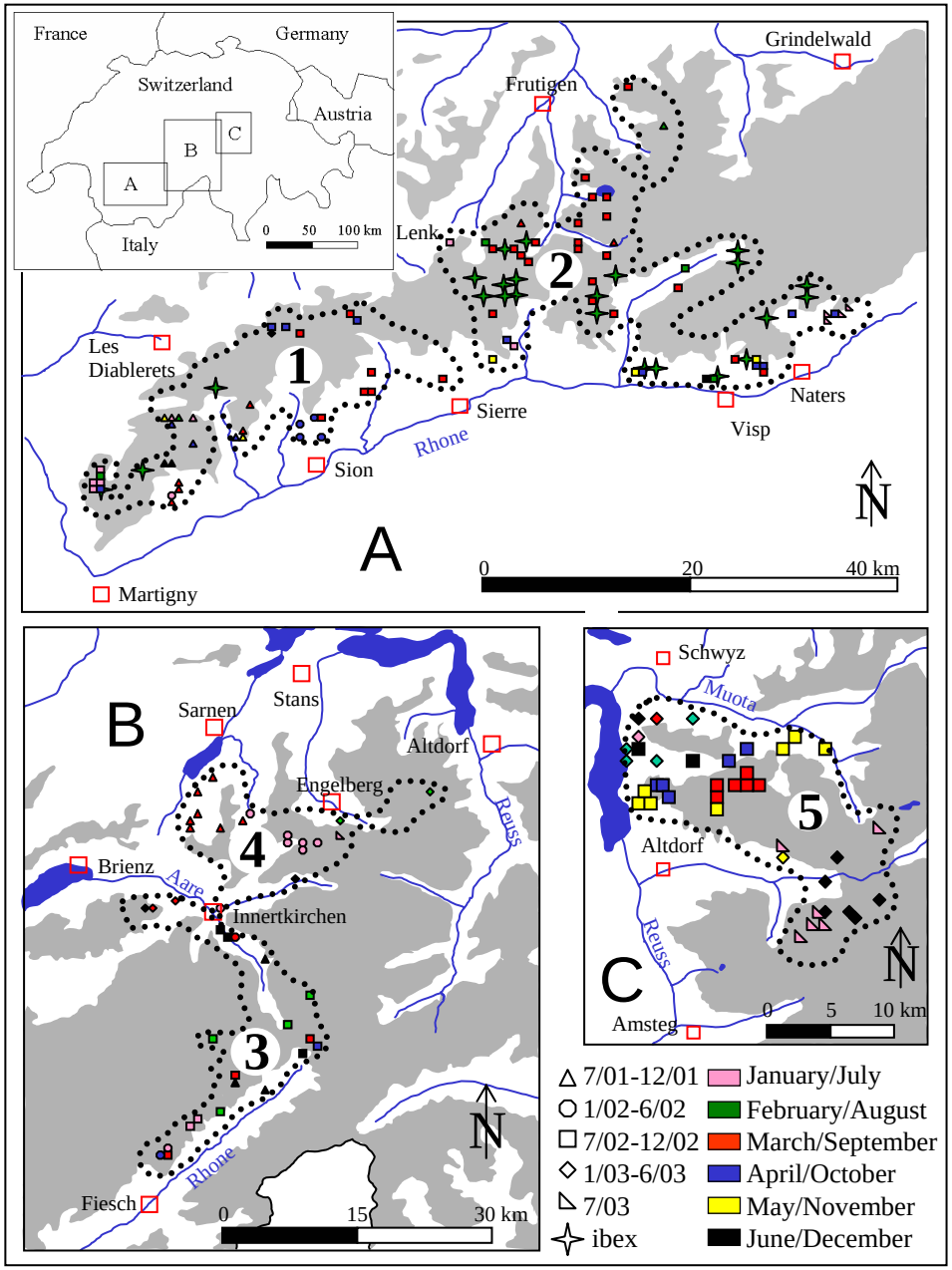

Outbreaks in wild Caprinae:

- epidemic spread
- deep valleys act as barrier for the spread of the disease
- overall speed of progression > 12 km / yr
- all sex and age-classes affected

Tschopp et al., 2005
Vet. Rec.

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IKC: Experimental infection in Alpine ibex: instillation of a sheep strain of *M. conjunctivae*

Giacometti et al., 1998

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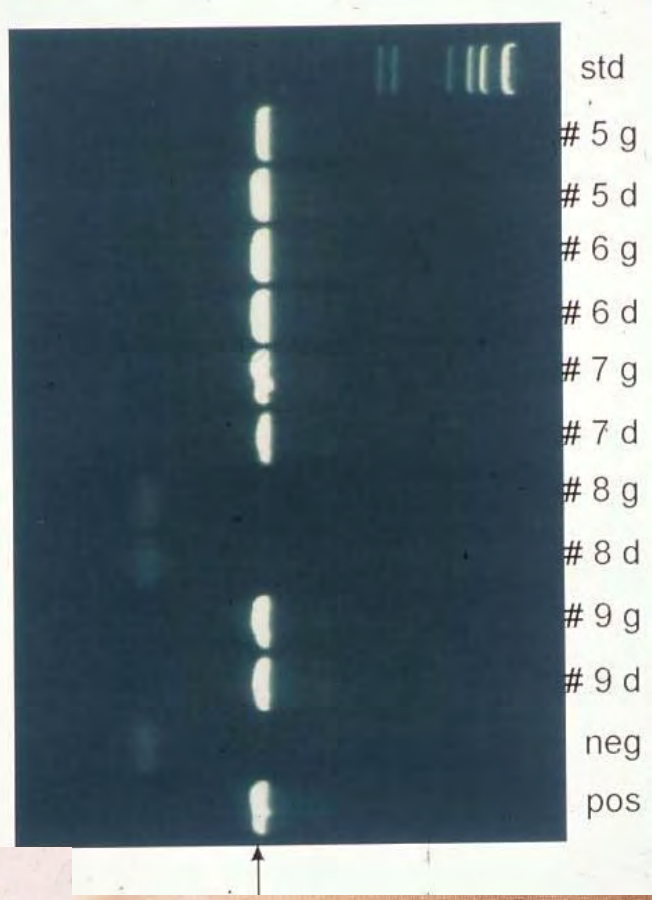
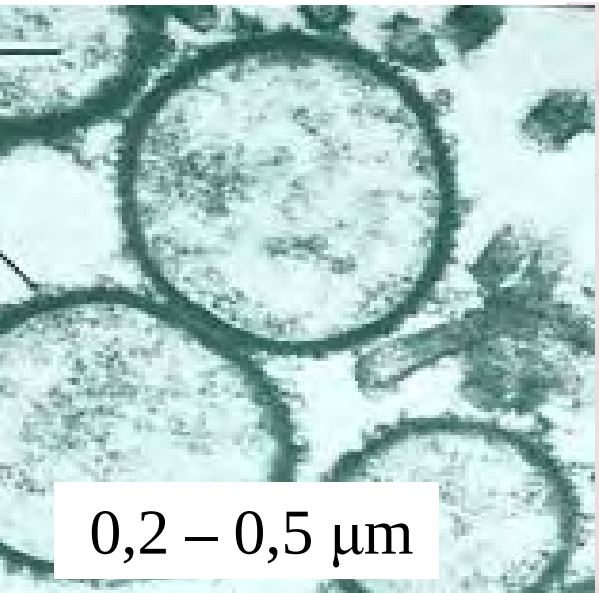
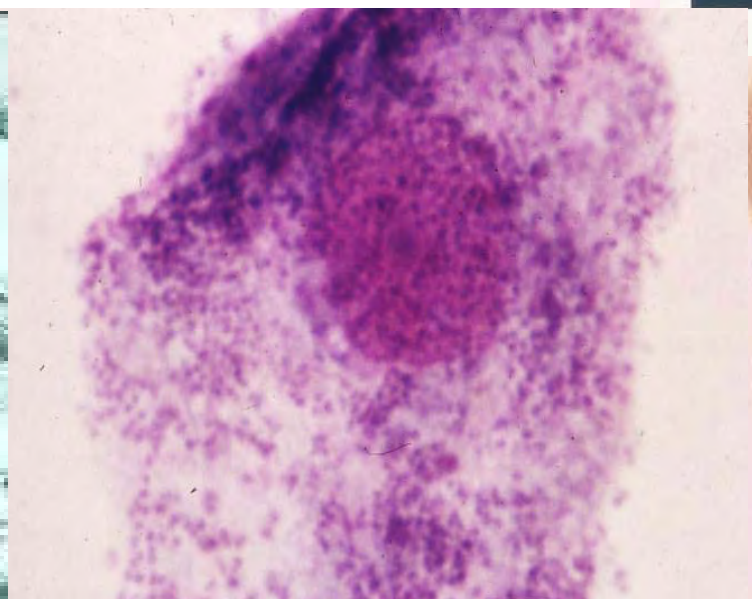
Mycoplasma conjunctivae: detection

- culture (difficult)
- nested PCR (16S rRNA)

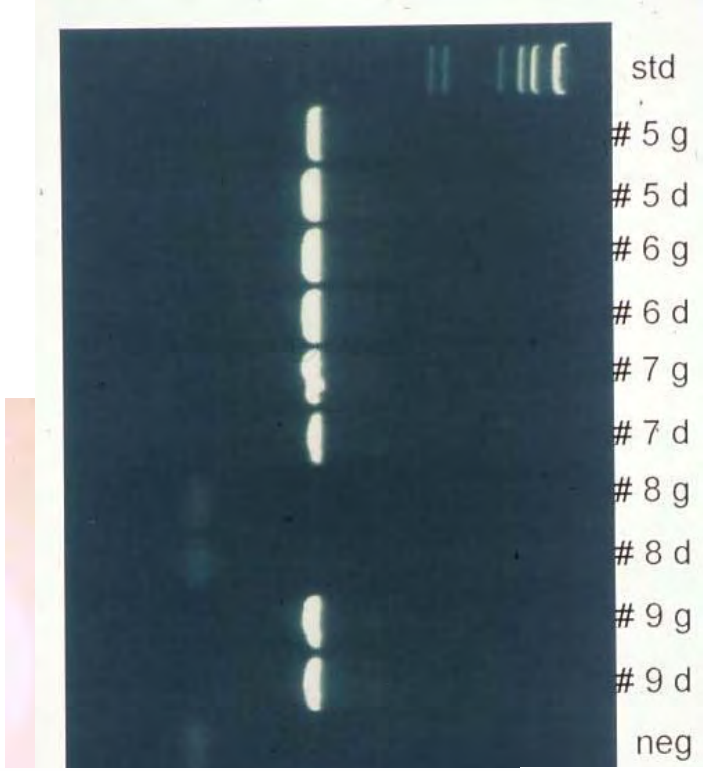






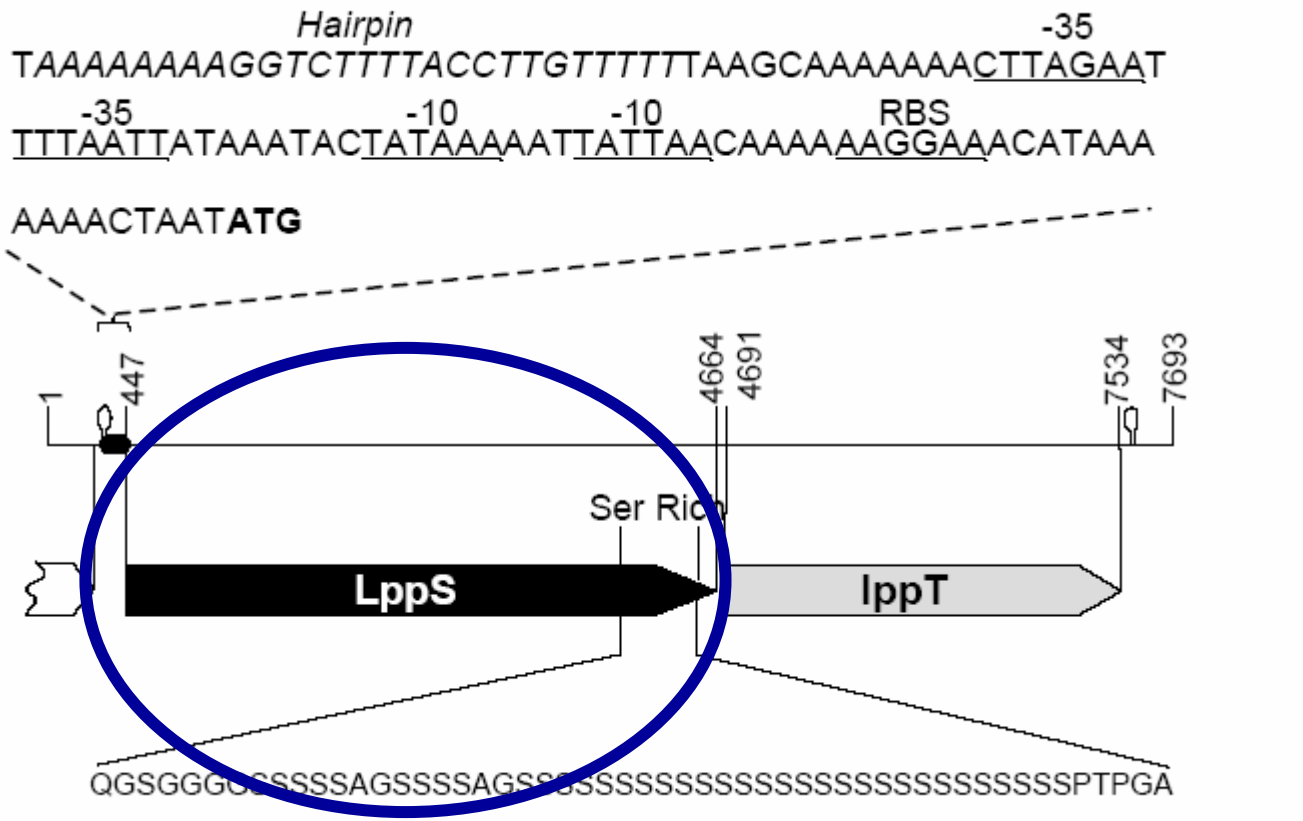
Mycoplasma conjunctivae: detection

- culture (difficult)
- nested PCR (16S rRNA)
- new: TaqMan real-time PCR (lppS-directed)



Viley et al, in press
J. Microbiol. Meth.

Belloy et al, 2003, Microbiology



Adhesins:

LppS, a serine-rich membrane protein

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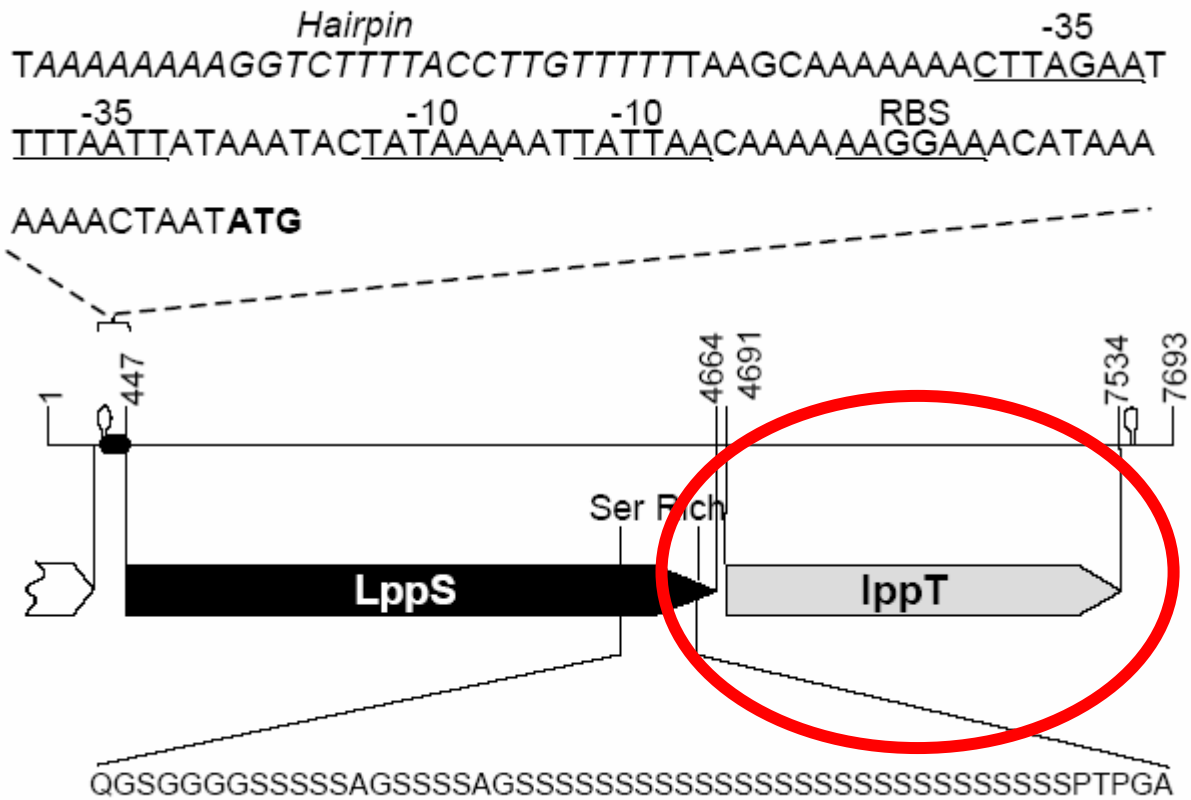
Belloy et al, 2003, Microbiology



Adhesins:

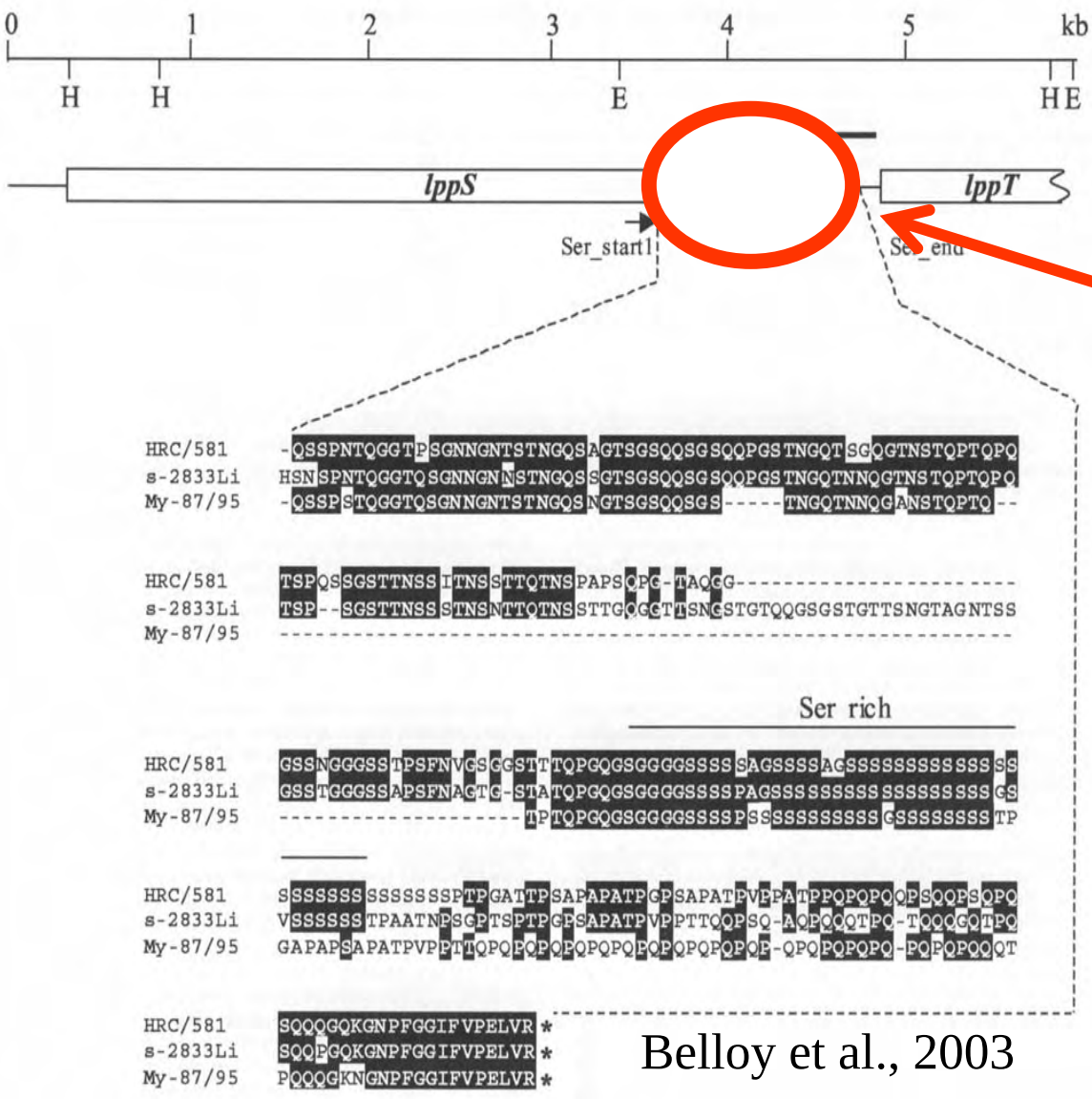
LppS, a serine-rich membrane protein

LppT, a membrane lipoprotein

(Zimmermann et al., in prep.)

Inter-specific transmission of Mycoplasma conjunctivae

Sequencing of *Mycoplasma conjunctivae*



Belloy et al., 2003

Part of the *lppS* gene used for the characterization of *M. conjunctivae* strains (sequence analysis)

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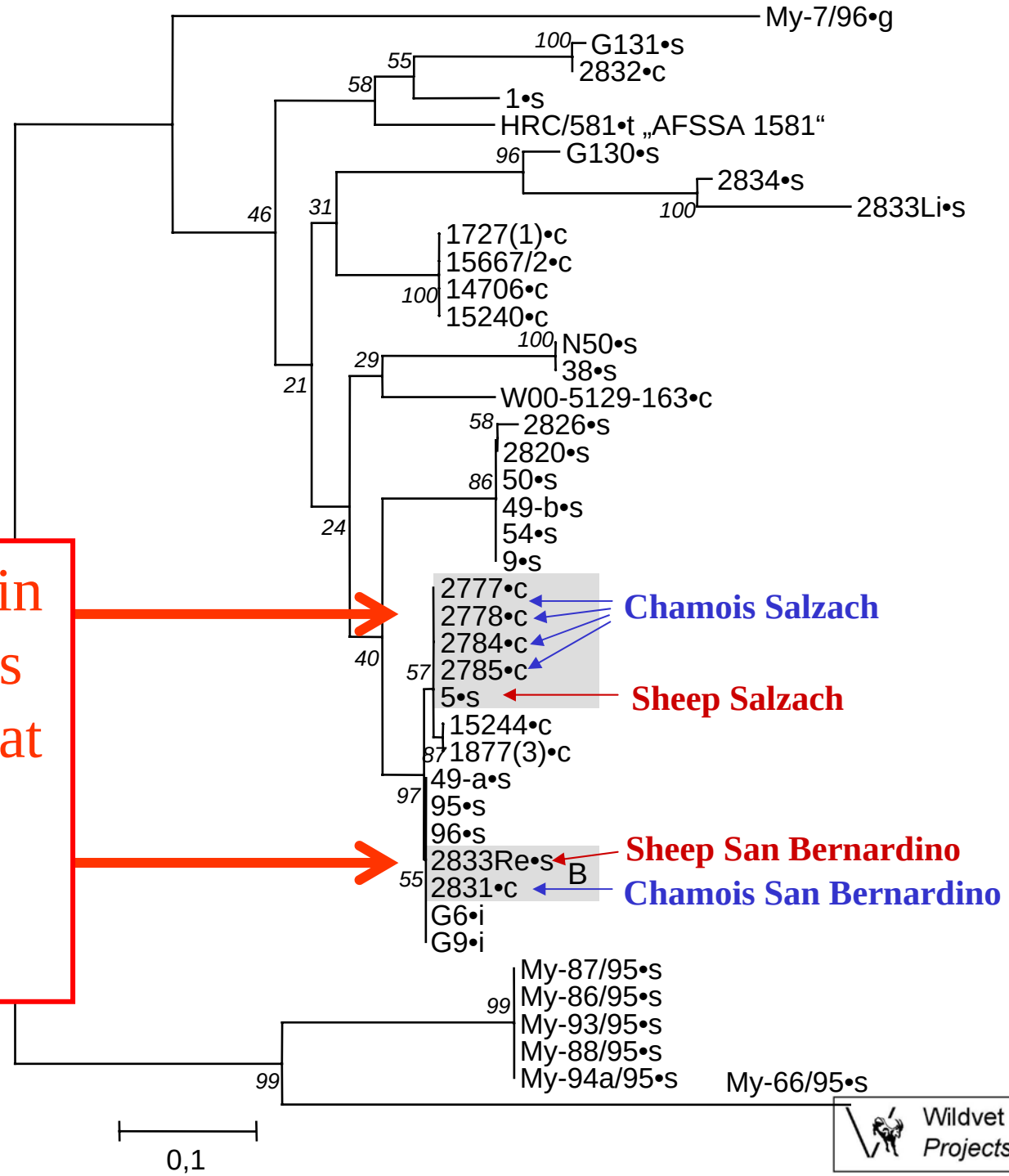
M. conjunctivae: one species, different strains!

Strains identified in sheep and chamois in the same place at the same time in Switzerland and Austria



Belloy et al., 2003

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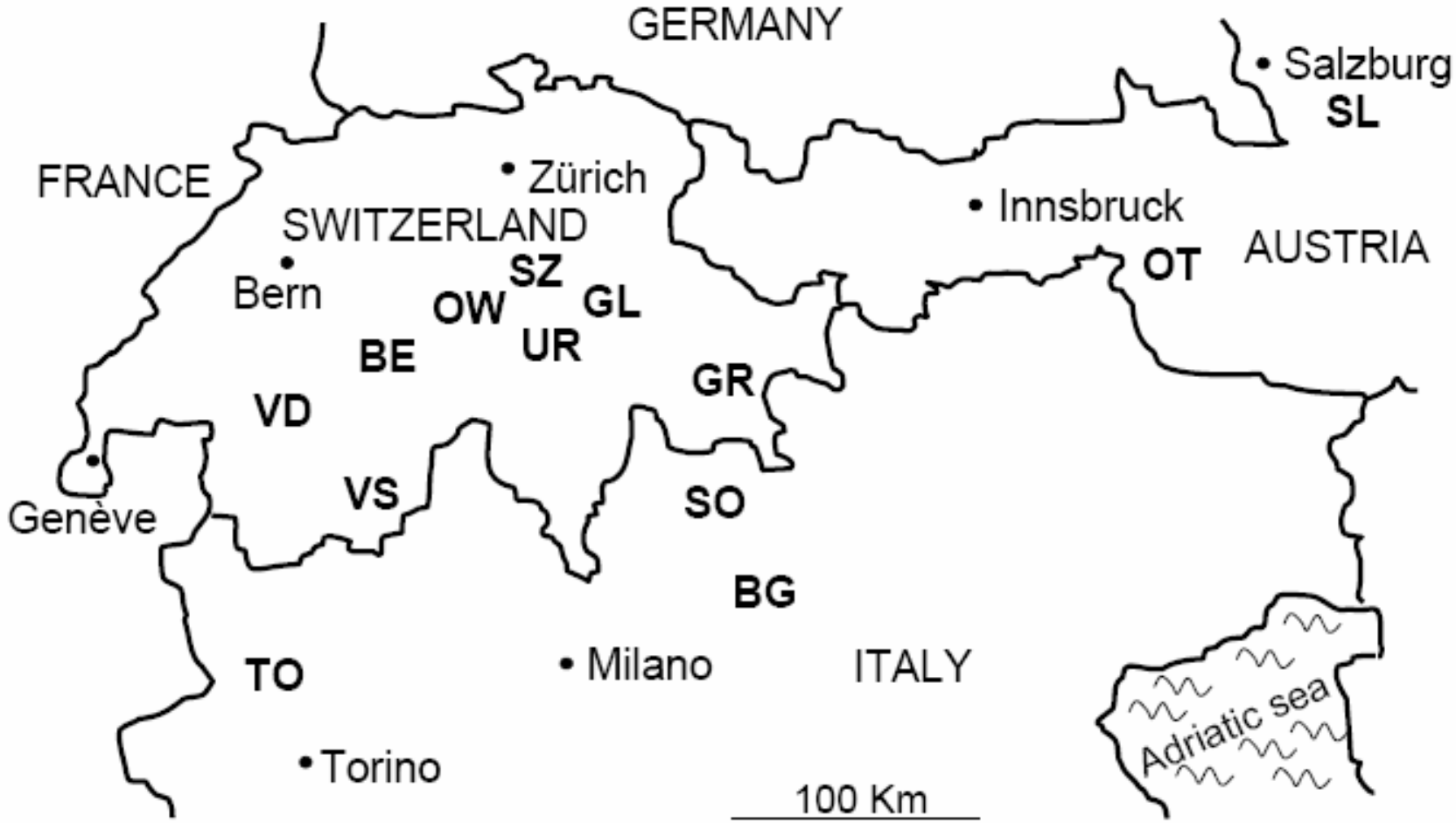
Zimmermann et al. (in press), Wildlife Biology



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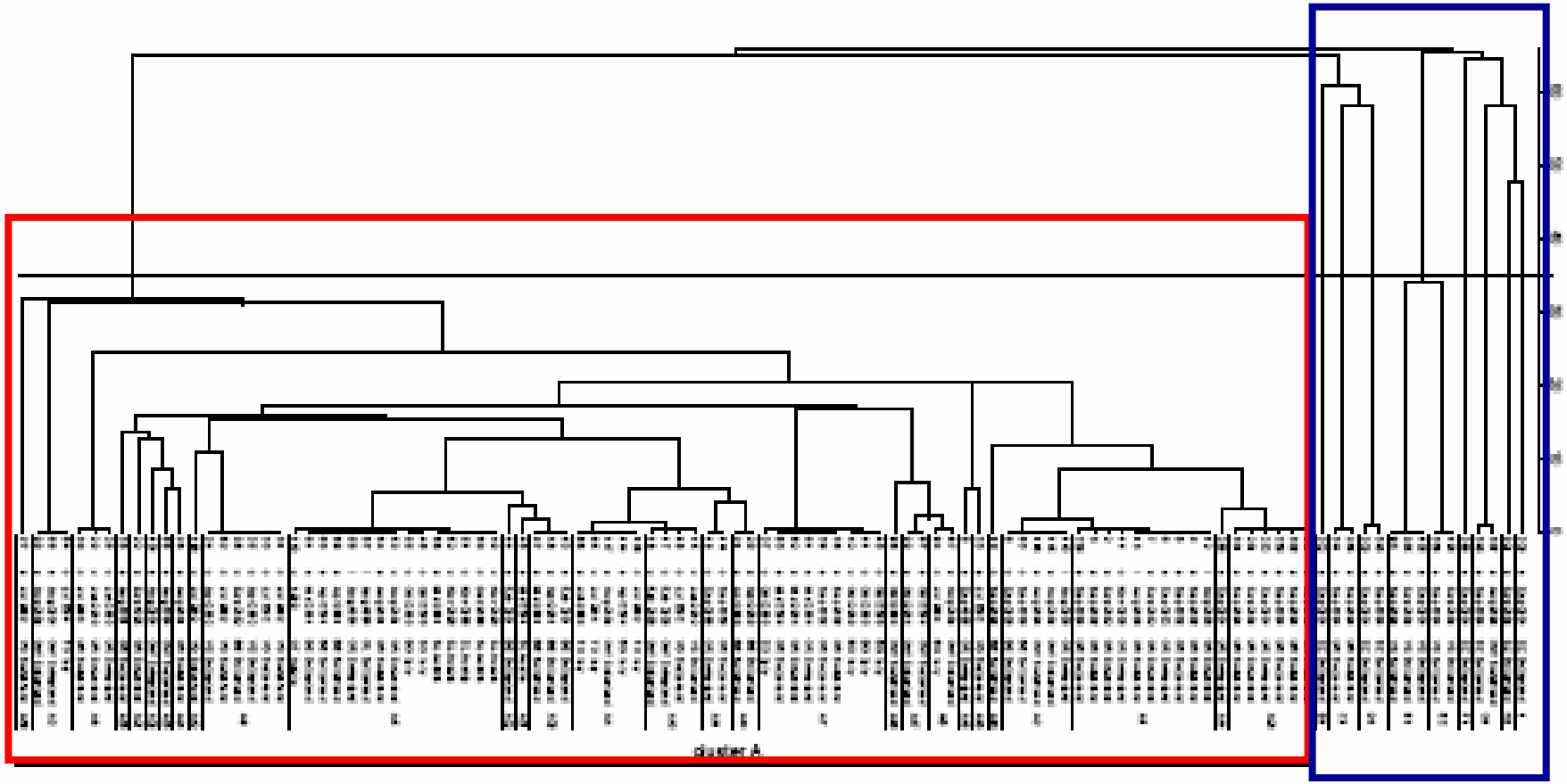
Zimmermann et al. (in press), Wildlife Biology



Cluster A: domestic and wild Caprinae

Several clusters: in domestic sheep only

Specificity of *M. conjunctivae* strains for chamois

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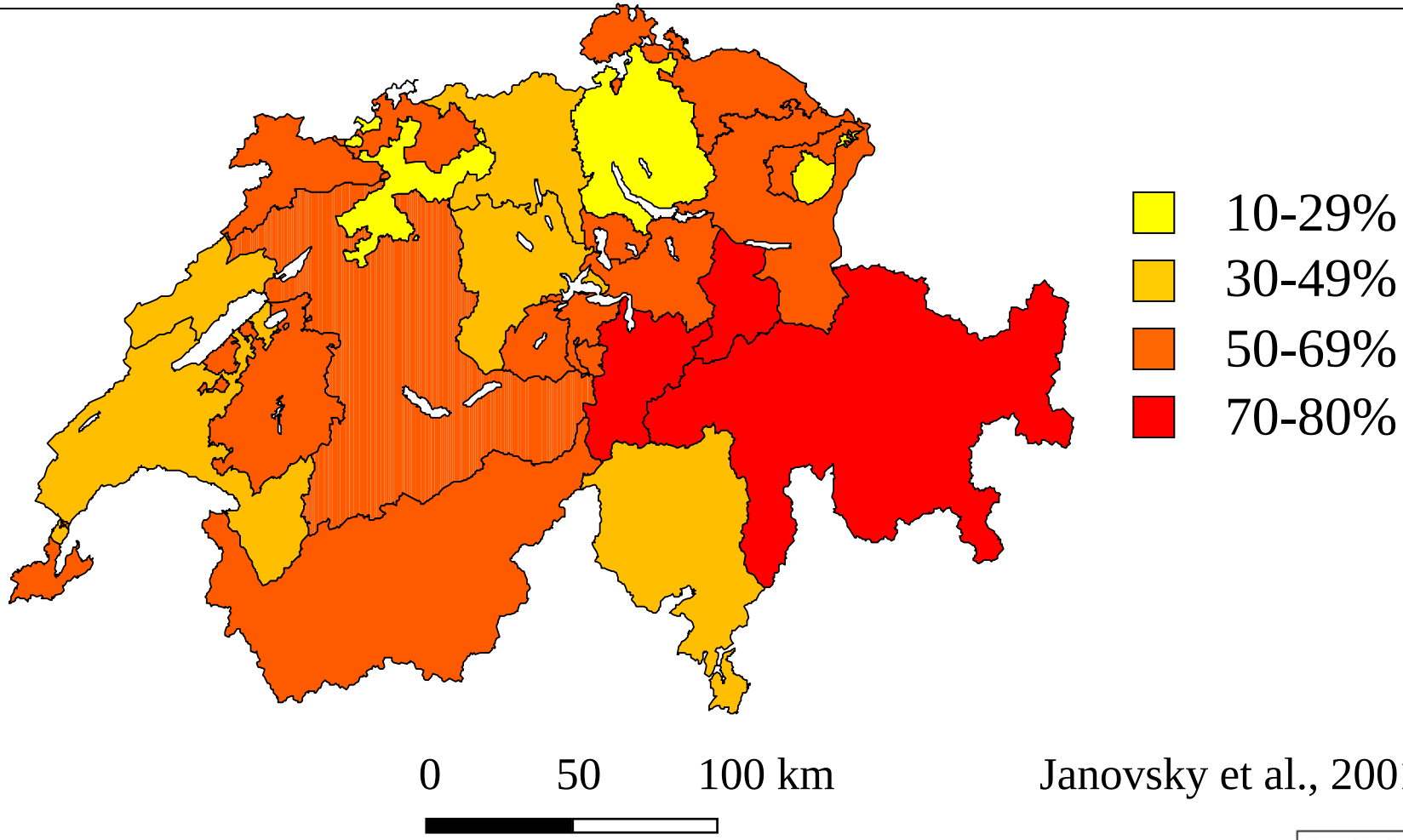
Seroprevalence of *M. conjunctivae* in adult domestic sheep at individual level in Switzerland in 1998 (ELISA)



Janovsky et al., 2001

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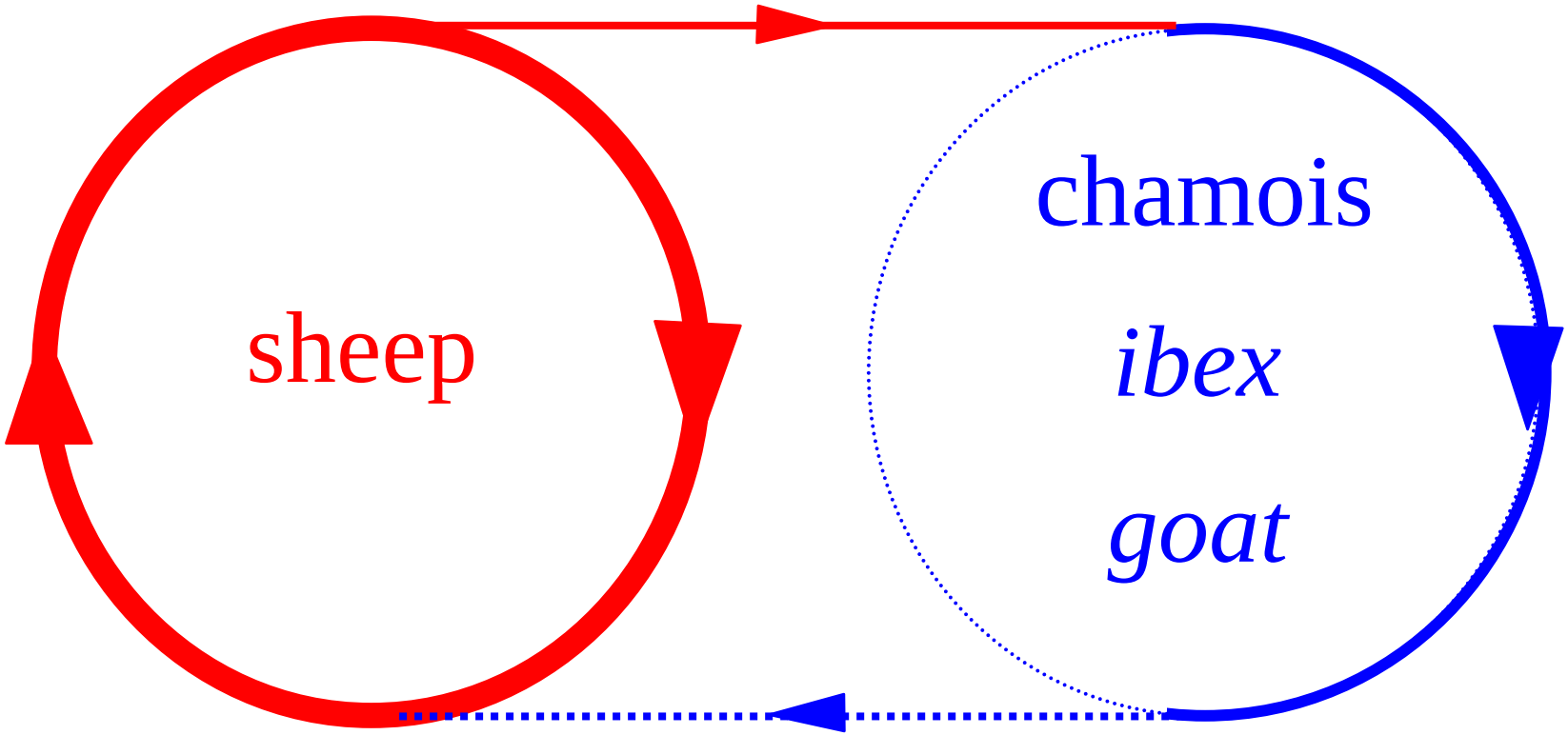
Interrelationship of *M. conjunctivae* in Caprinae species in Switzerland



wild Caprinae require boost from sheep

Janovsky et al., 2001, Giacometti et al. 2002

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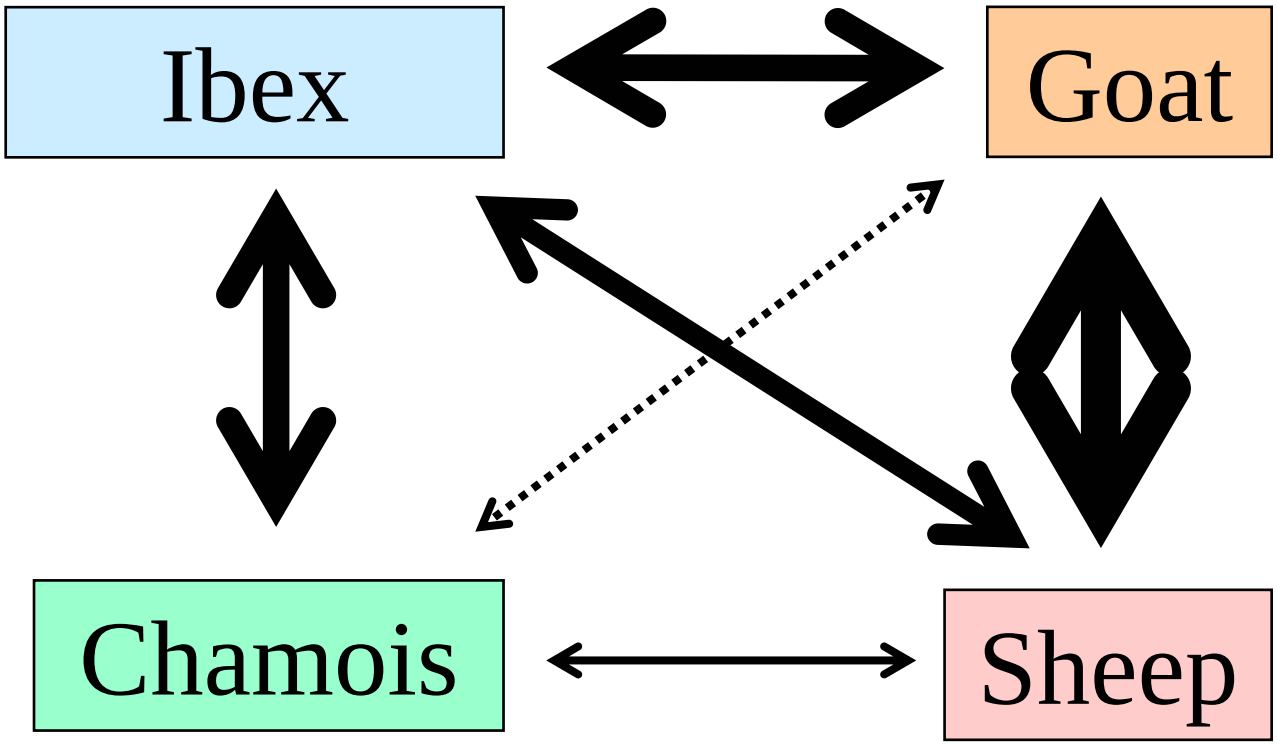
Interspecific transmission: short distance encounters?

Transmission risk for *M. conjunctivae*: hypothesis



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IKC: open questions

- ethology: transmission (intra- and inter-specific transmission)

- molecular biology of the agent:
  - pathogenesis,
  - molecular epidemiology

- immunology: vaccine to eradicate infection in domestic Caprinae...

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It is a challenge to study wildlife diseases which are <u>not</u> regarded to be officially important...