

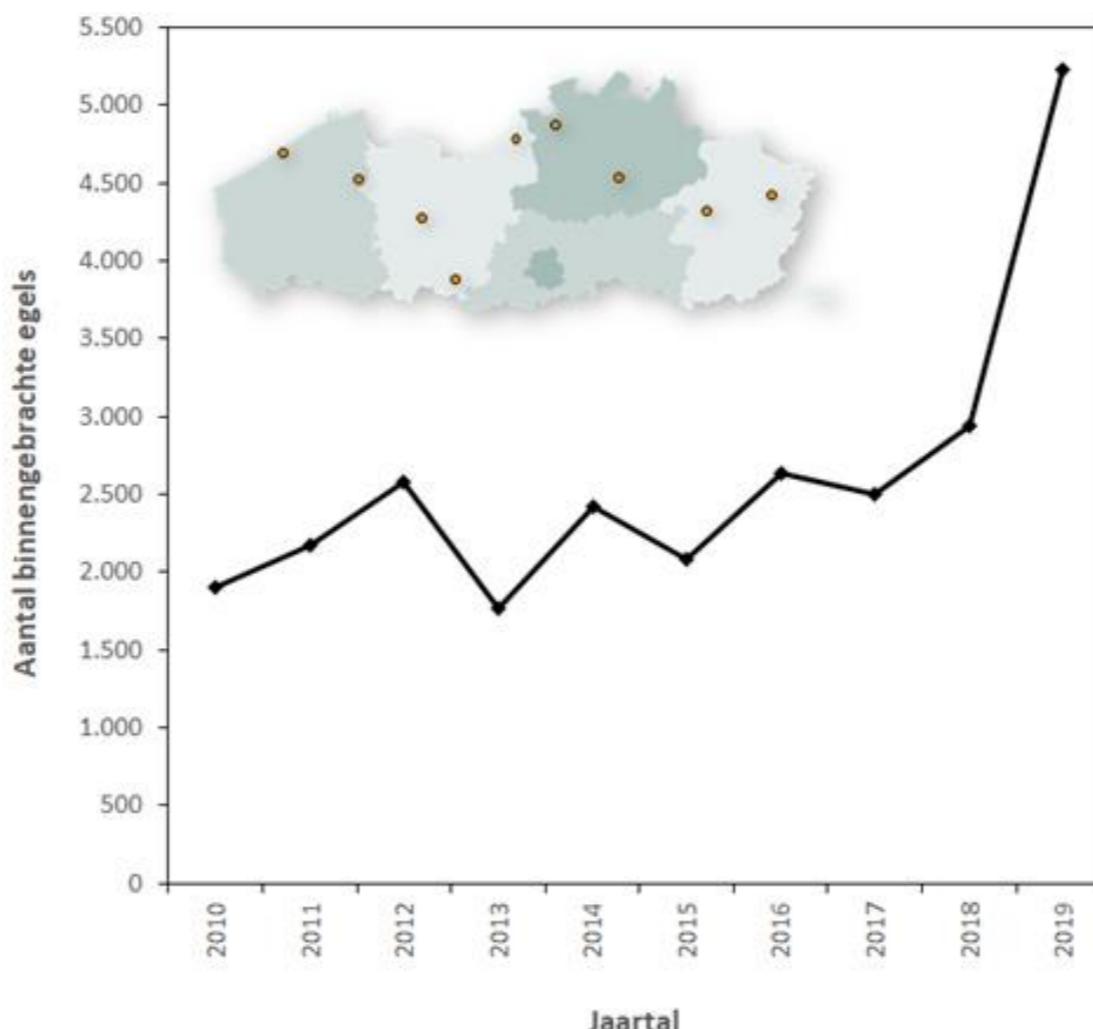
ZOONOTIC CORYNEBACTERIUM ULCERANS

INFECTIONS IN HEDGEHOGS:

A ONE HEALTH PERSPECTIVE

An Martel

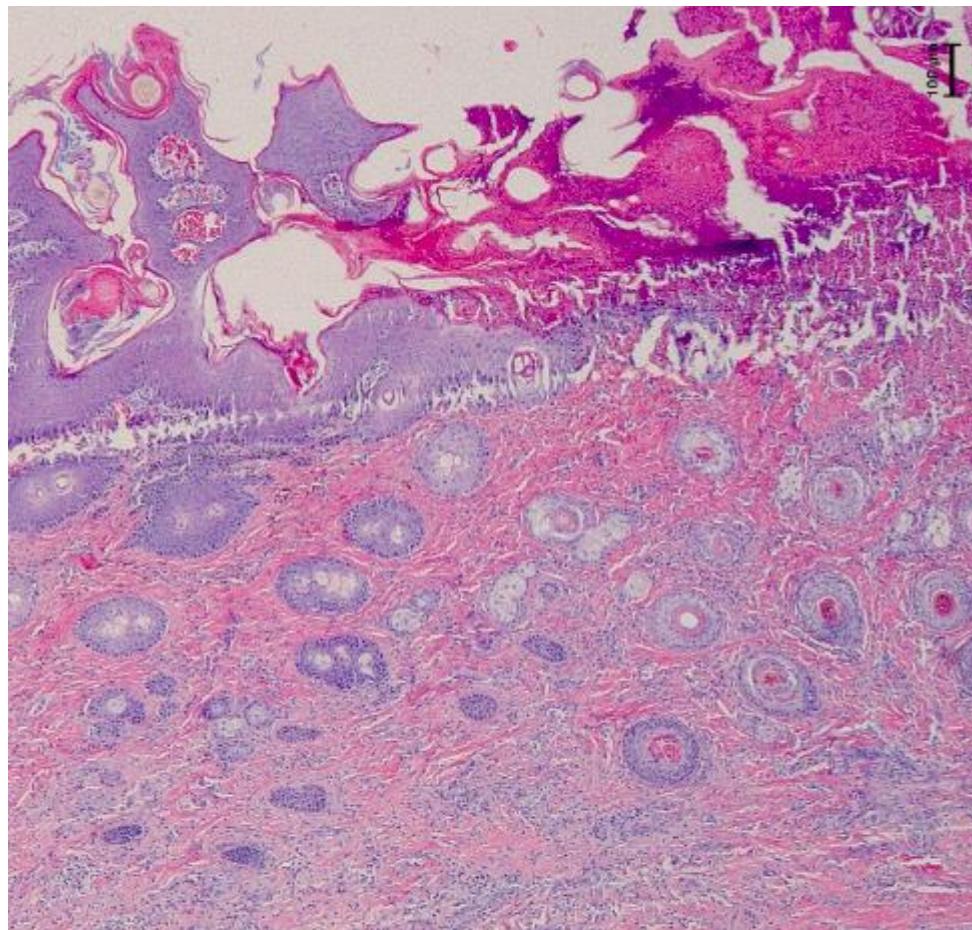
HEDGEHOG DIPHTHERIC DISEASE



Number of hedgehogs in rescue centres



CORYNEBACTERIUM ULCERANS



Moore et al., 2015

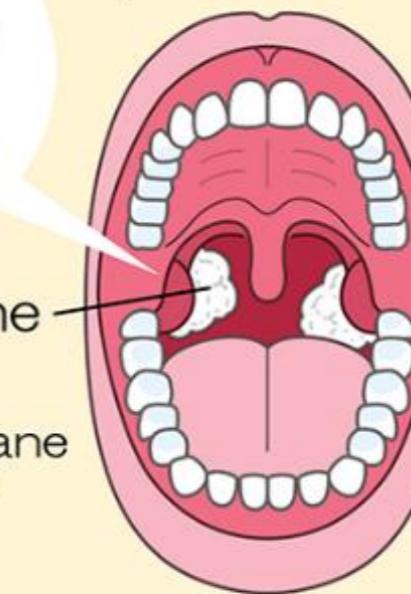
Ulcerative dermatitis with suppurative exsudation and inflammation



Corynebacterium ulcerans infection



Diphtheria



Pseudomembrane

- Sore throat
- grey pseudomembrane covering the tonsils
- Dyspnea
- Abnormal change in the voice (Hoarseness)



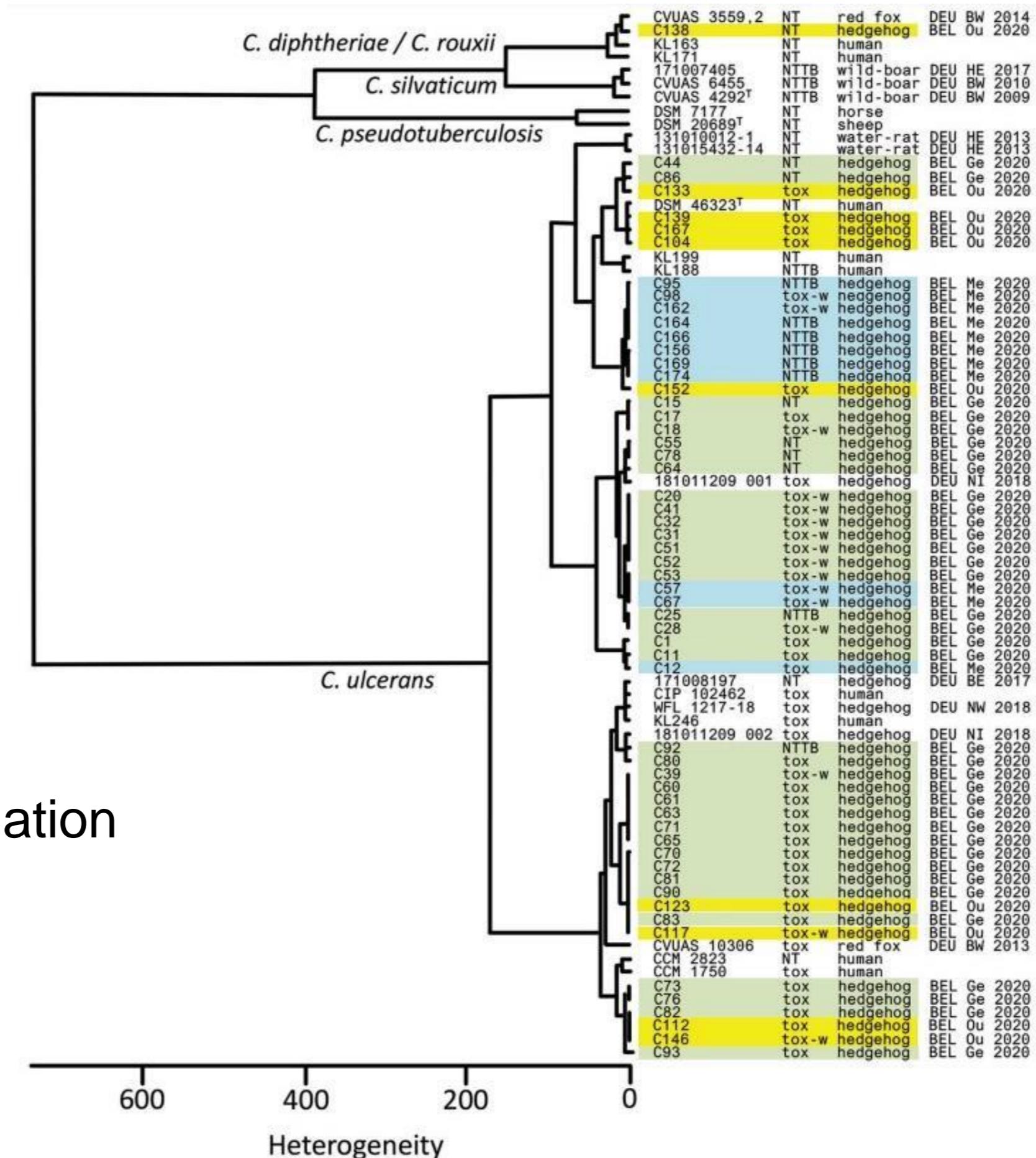
TOXIN PRODUCTION CONFIRMS ZOONOTIC RELEVANCE

- *toxE* gene: 50/56 *C. ulcerans* isolates
- Positive Elek test: 42/56 *C. ulcerans* isolates



C. ULCERANS

Close similarity between hedgehog and human strains



OTHER ZOONOTIC PATHOGENS LINKED WITH HDD

188 hedgehogs



Salmonella sp.

Enteritidis, 3 pulsotypes

19%

Leptospira sp.

L. interrogans (n=20)
L. borgpetersenii (n=1)

11%

Borrelia burgdorferi sensu lato 21%

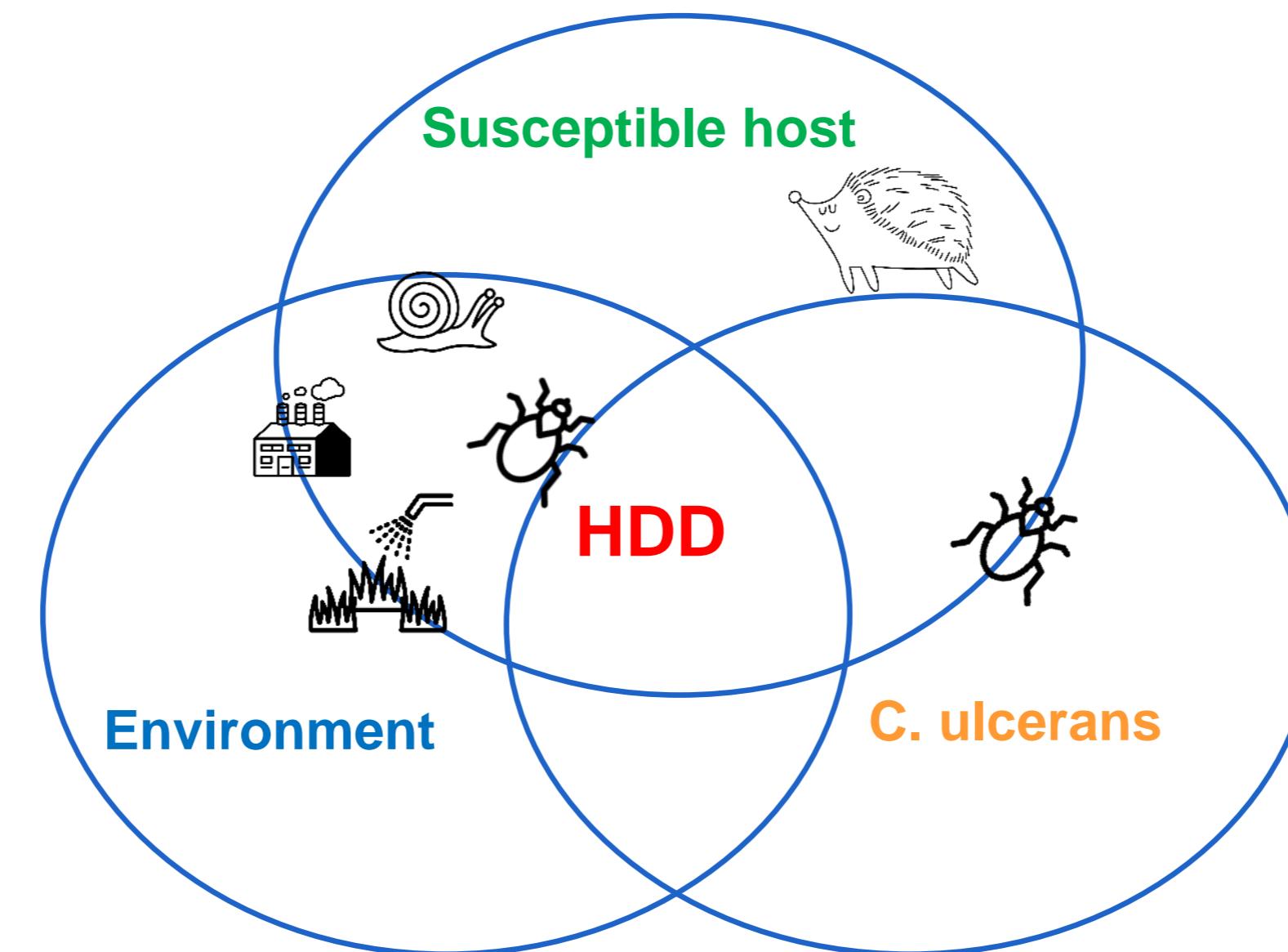
B. afzelli (n=30)
B. bavariensis (n=7)
B. spielmanii (n=7)

Corynebacterium ulcerans

31%



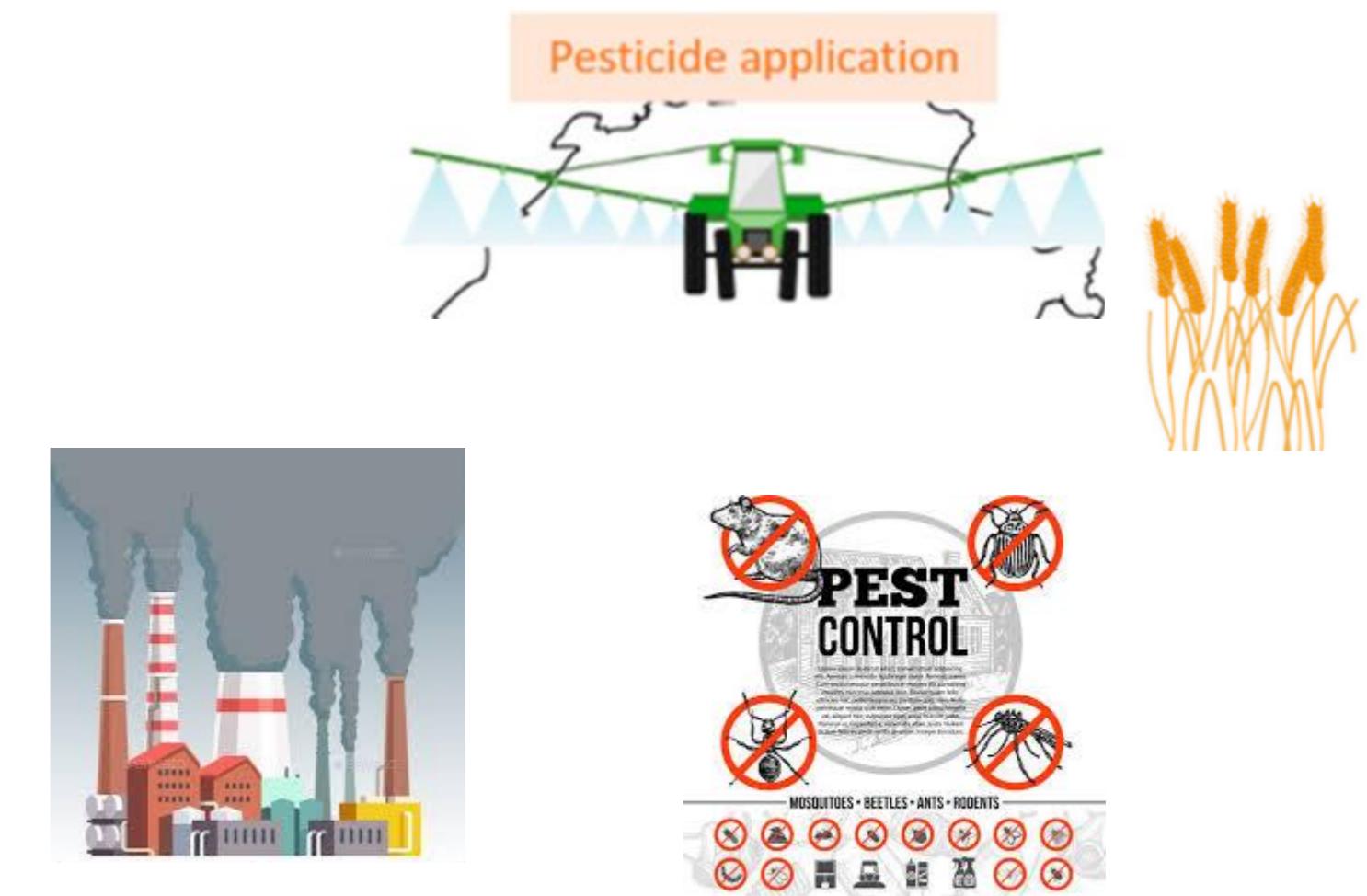
MULTIFACTORIAL DISEASE



ENVIRONMENTAL CONTAMINATION

- 30 liver samples hedgehogs
 - 10 animals with HDD lesions Geraardsbergen region
 - 10 animals without HDD lesions Geraadsbergen region
 - 10 animals without HDD lesions Oostende region

- Herbicides
- Insecticides
- Rodenticides
- Heavy metals



HERBICIDES AND INSECTICIDES

Residues of herbicides detected in 90% of the animals

Two herbicide compounds:

- Tembotrione: 90% (mean conc 0,17mg/kg)
- Mesotrione: 50% (mean conc 0,05mg/kg)



Insecticide compounds

- Heptachlor: 10%
- DDT: 1 animal
- Aldrin/dieldrin: 1 animal

RODENTICIDES

87 %

- residues of anticoagulant rodenticides
- regional difference

Detected compounds

coumatetralyl: 13% $0,25 \pm 1,02 \mu\text{g/kg}$ ww

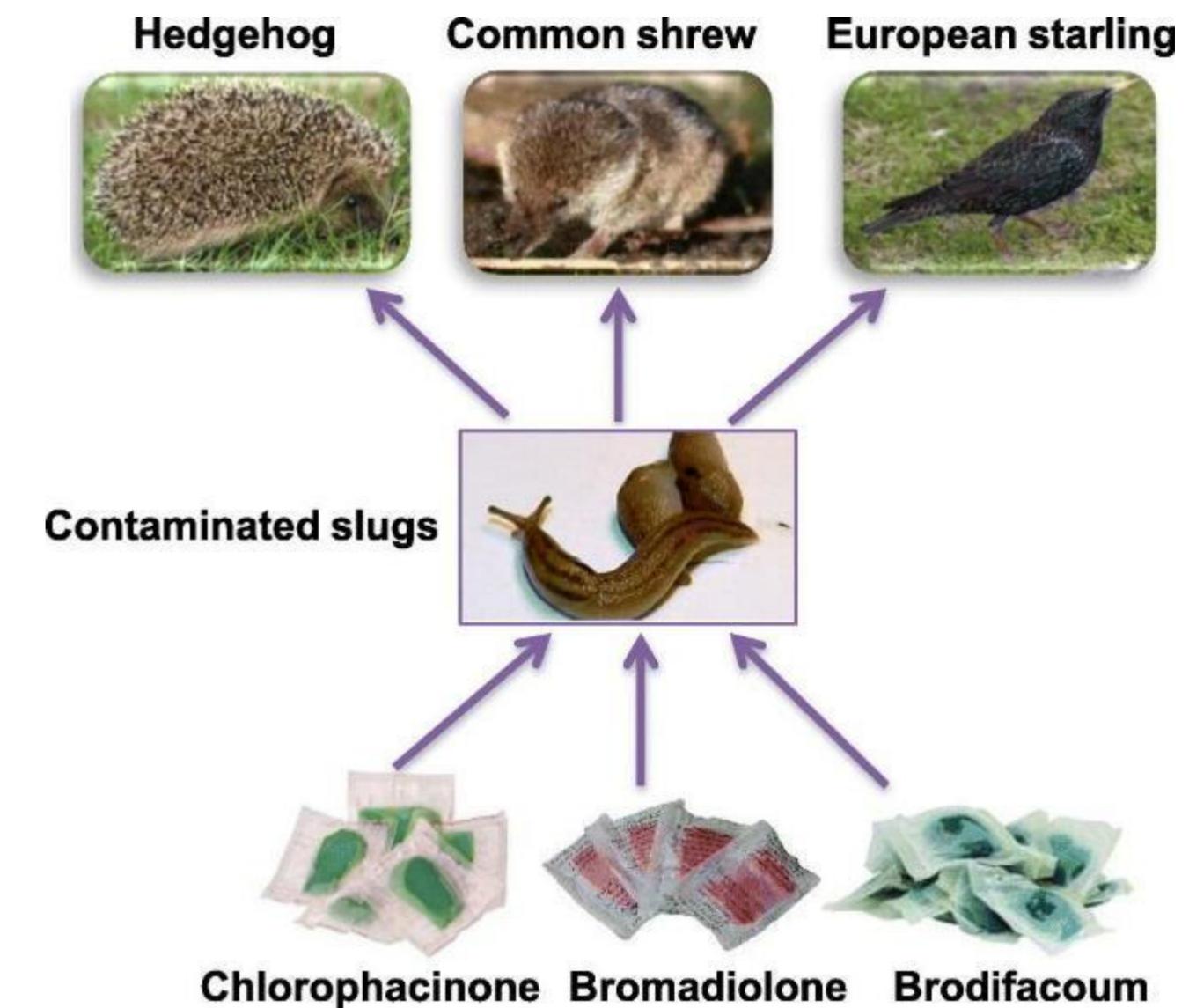
difenacoum: 57% $21,87 \pm 63,40 \mu\text{g/kg}$ ww

brodifacoum: 47% $12,62 \pm 44,72 \mu\text{g/kg}$ ww

flocoumafen: 27% $0,12 \pm 0,3 \mu\text{g/kg}$ ww

bromadiolone: 43% $22,05 \pm 107,45 \mu\text{g/kg}$ ww

difethialone: 10% $0,61 \pm 3,28 \mu\text{g/kg}$ ww

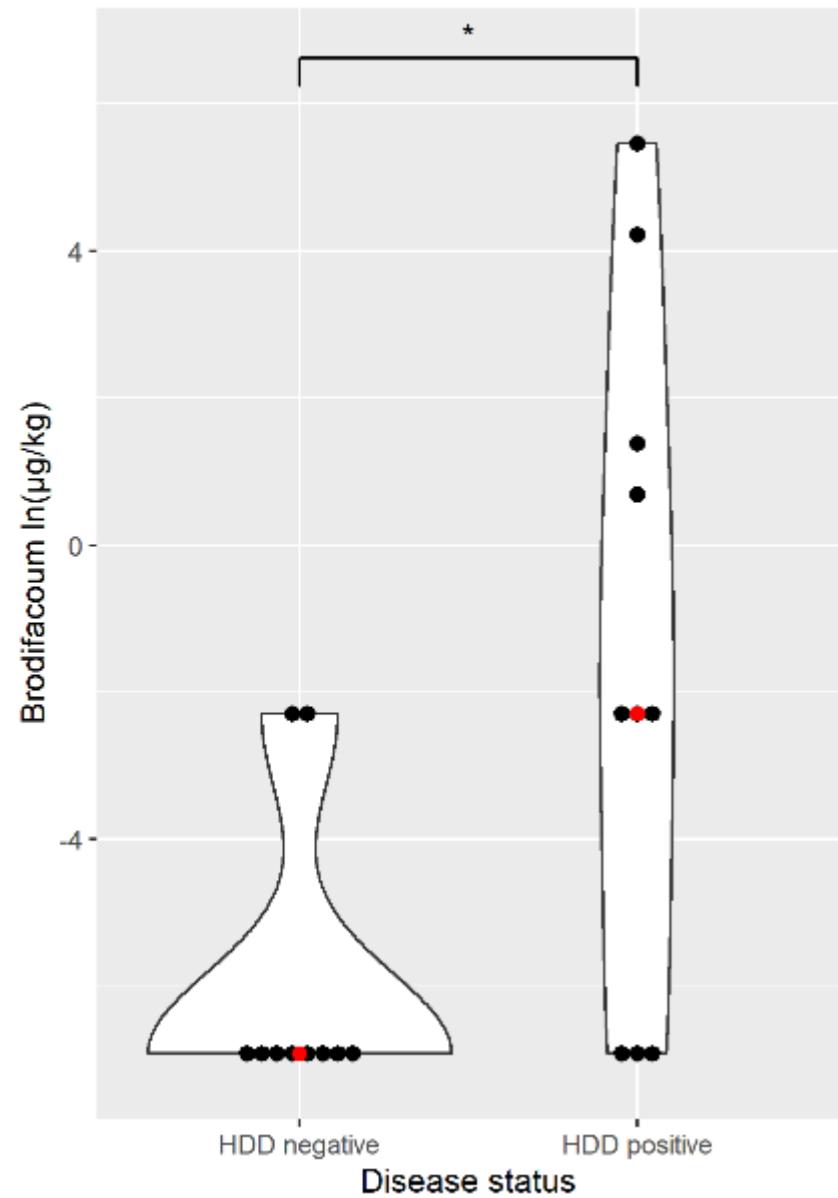


Alomar et al., 2018

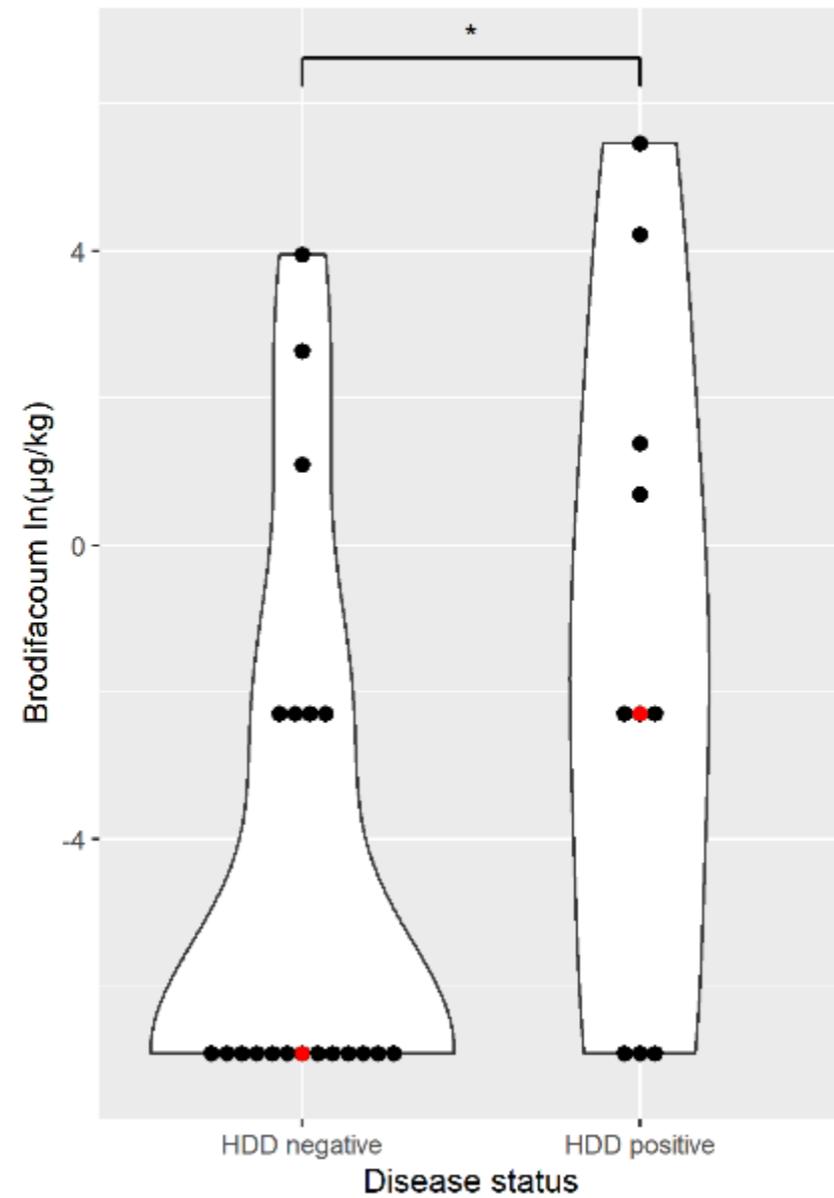
RODENTICIDES

BRODIFACOUM

A Geraardsbergen only dataset

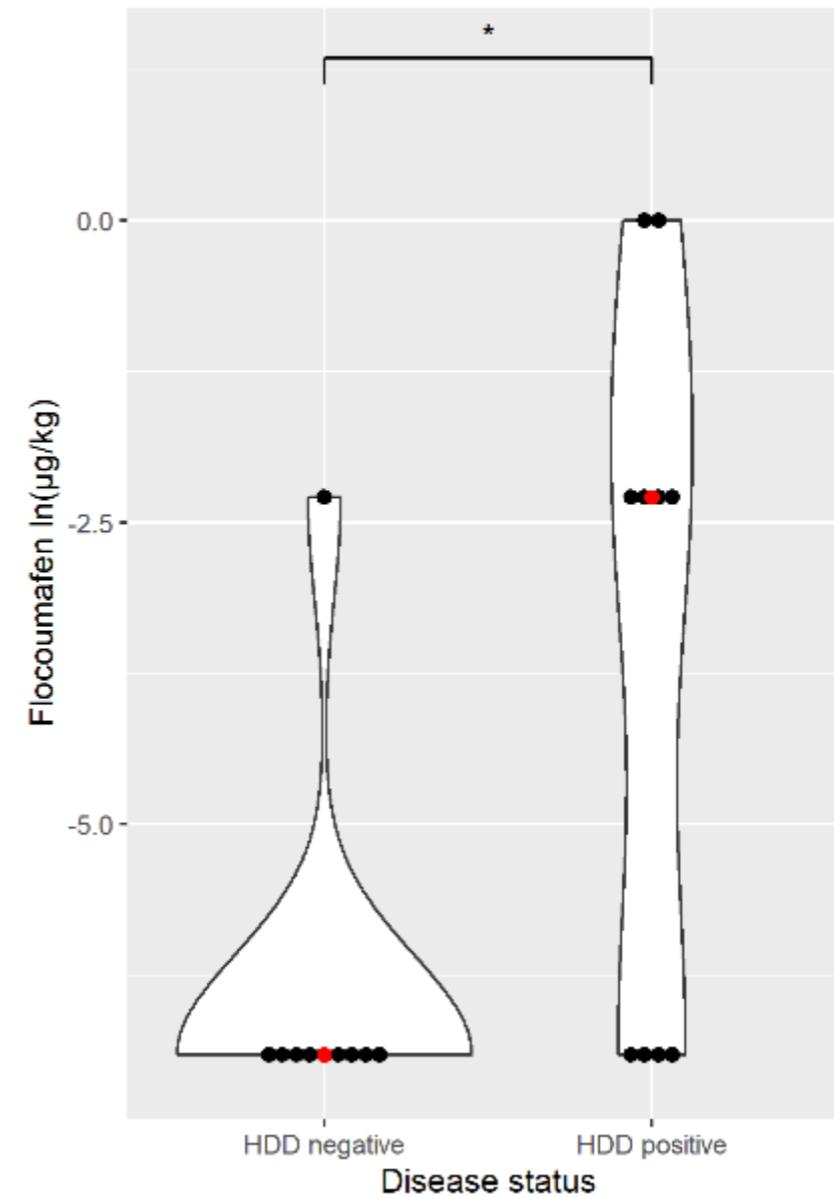


B Complete dataset

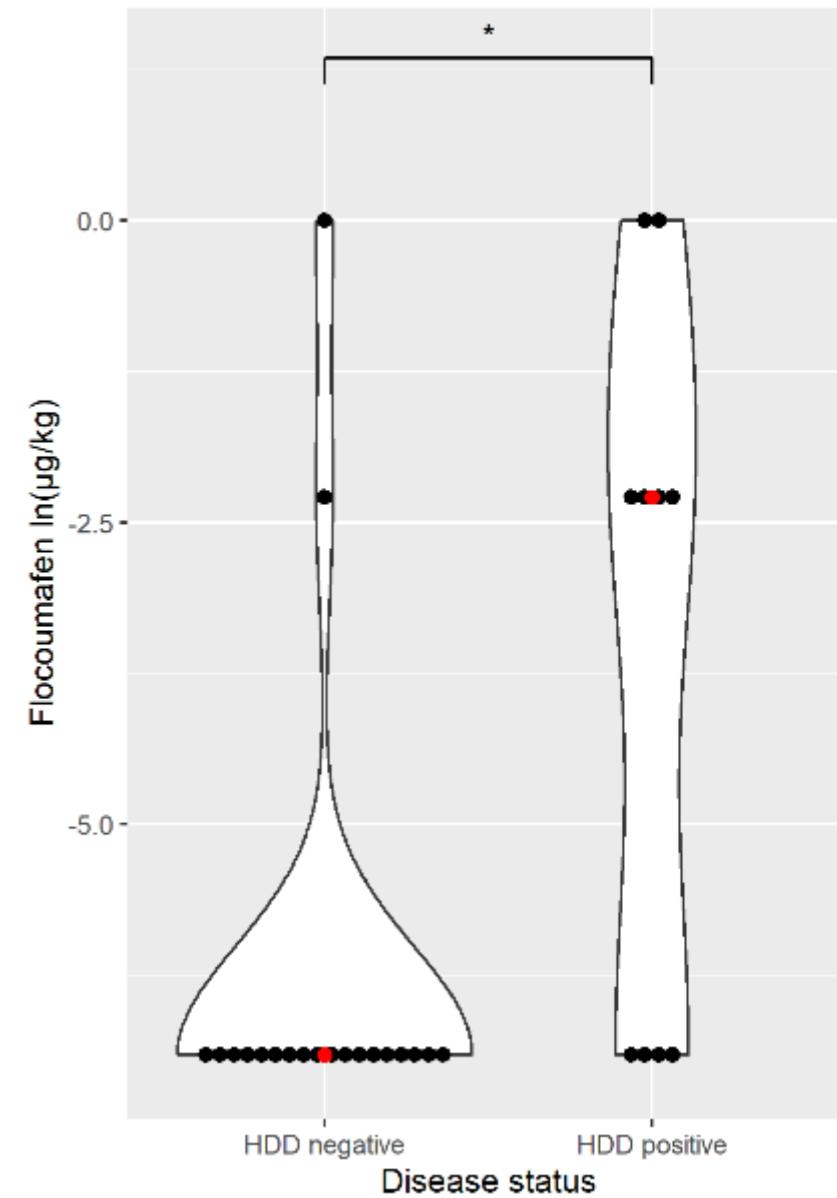


FLOCOUMAFEN

A Geraardsbergen only dataset



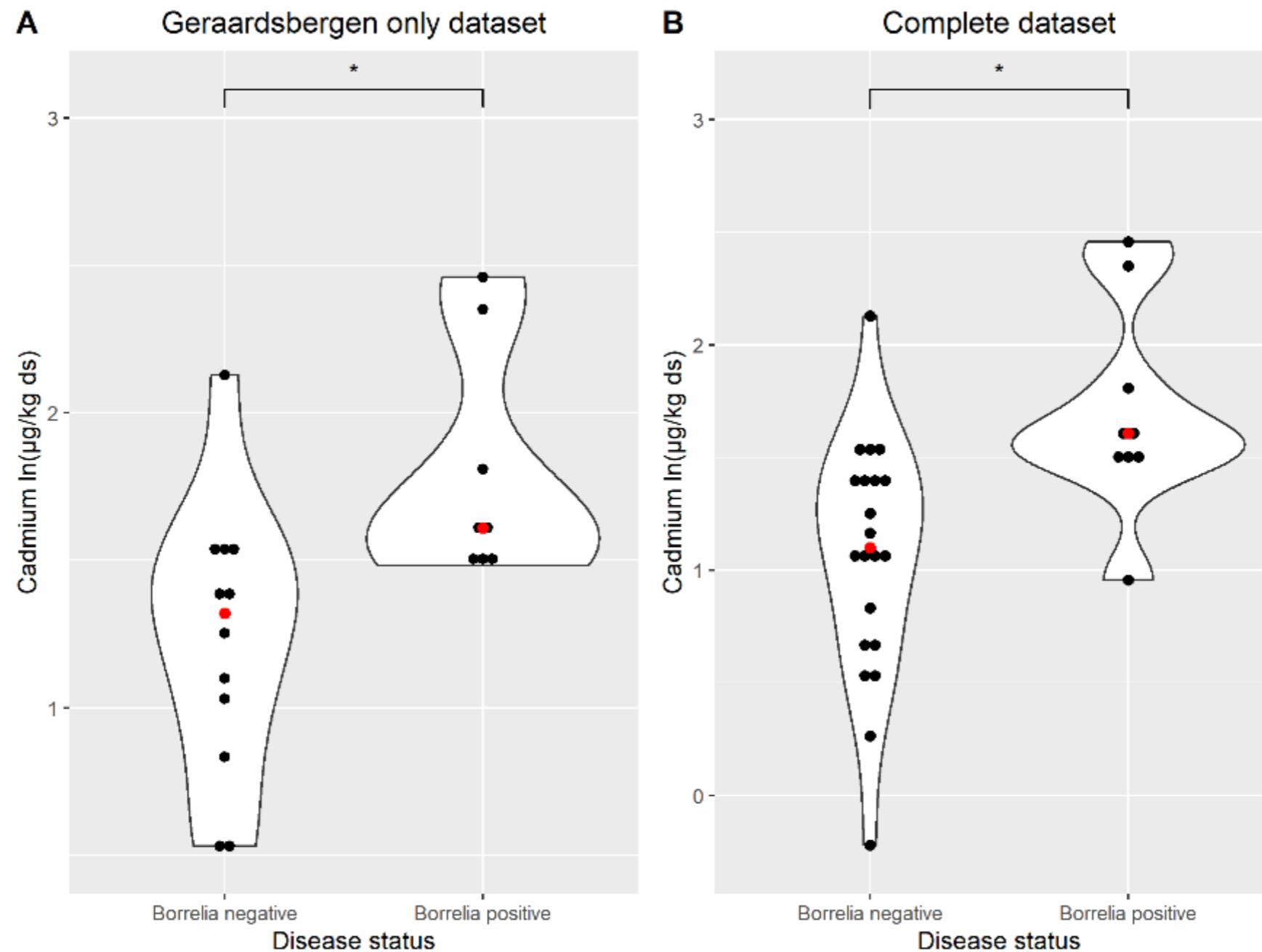
B Complete dataset



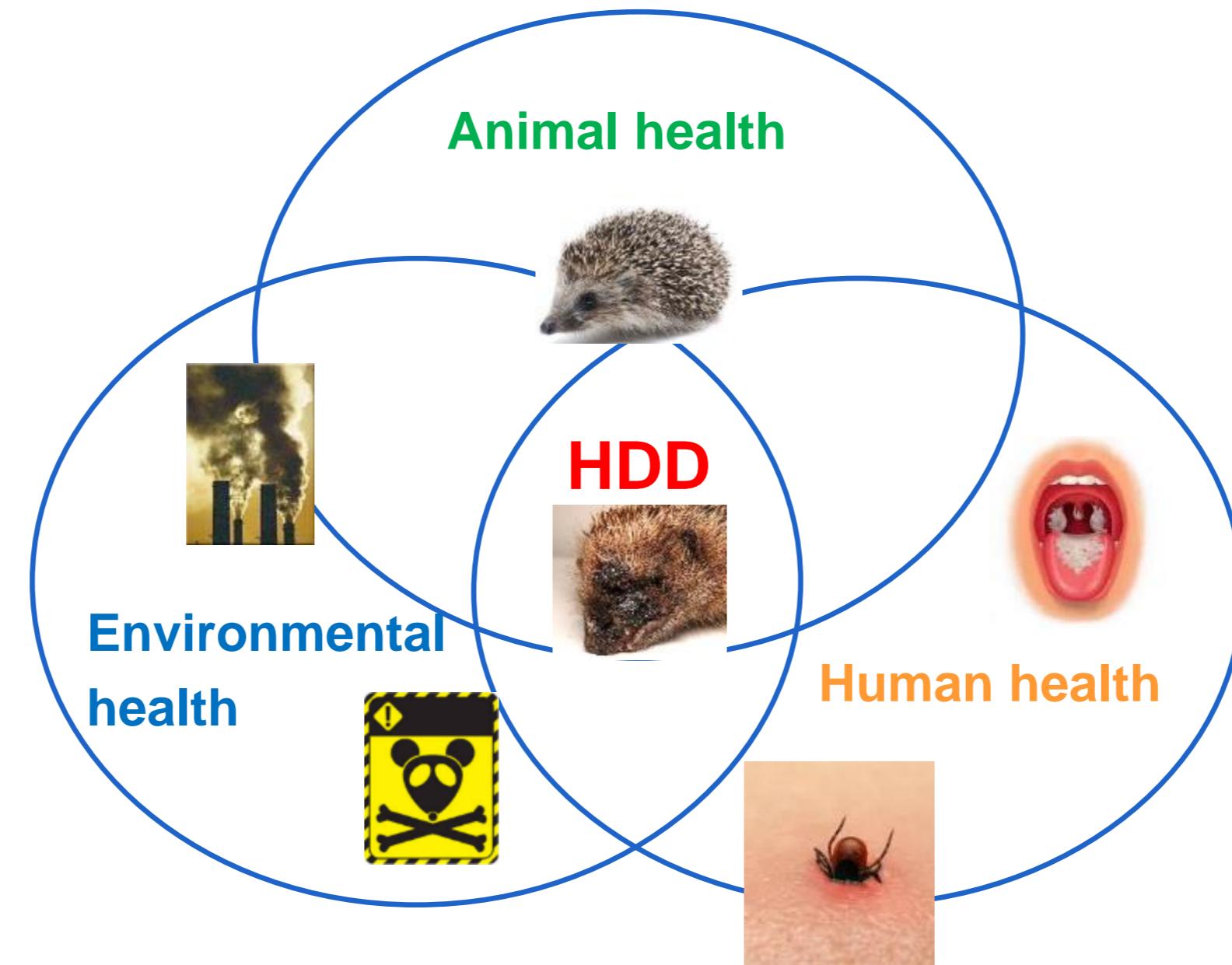
HEAVY METALS

- Arsenic : 37%
 $0,09 \pm 0,14 \text{ mg/kg dw}$
- Cadmium: 30%
 $4,11 \pm 2,46 \text{ mg/kg dw}$; regional difference
- Lead: 30%
 $2,19 \pm 1,28 \text{ mg/kg dw}$

HEAVY METALS: CADMIUM - BORRELIA



CONCLUSION: ONE HEALTH



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VOC Geraardsbergen

