



# Hidden biodiversity and disease: the case of echinococcosis in Africa

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# Research initiative – *Echinococcus* spp.

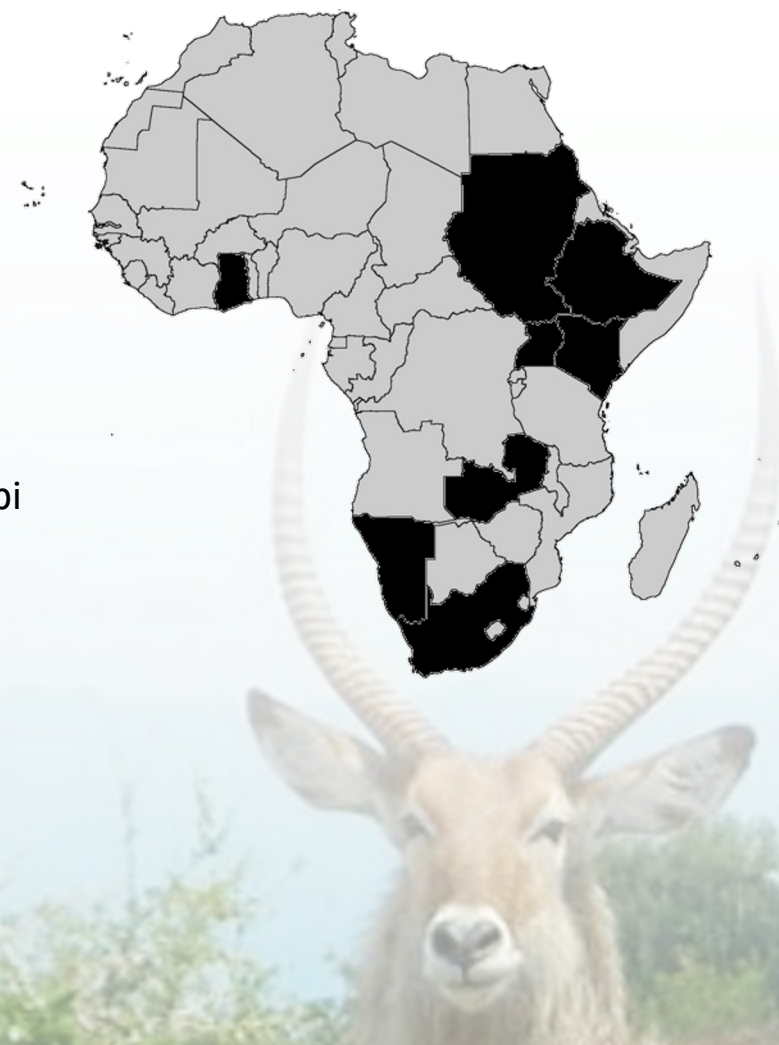


2009-2018

2022-2025

## Cystic Echinococcosis in Sub-Saharan Africa Research initiative

<b>Germany:</b>	<b>University of Hohenheim</b> <b>Ulm University Hospital &amp; Medical Center</b>
<b>Sudan:</b>	Al-Neelain University, Khartoum Ministry of Livestock, Central Laboratories University of Gezira, Wad Medani
<b>Ethiopia:</b>	<b>Addis Ababa University, Addis Ababa</b>
<b>Kenya:</b>	<b>Kenya Medical Research Institute, Nairobi</b> <b>Meru University of Science and Technology</b> African Medical and Research Foundation, Nairobi
<b>Uganda:</b>	Makerere University
<b>Ghana:</b>	<b>University for Development Studies, Tamale</b>
<b>Zambia:</b>	<b>University of Zambia, Lusaka</b>
<b>Namibia:</b>	<b>University of Namibia, Windhoek</b> Ministry of the Environment, Windhoek
<b>South Africa:</b>	University of the Witwatersrand, Johannesburg







## Research initiative – *Echinococcus* spp.



1983



2022



“Helminths” (parasitic worms)

↳ phylum - Platyhelminths (flatworms)

↳ class - Cestoda (tapeworms)

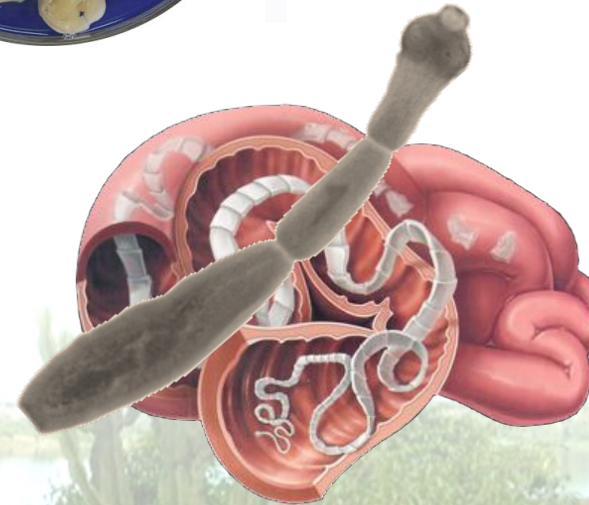
↳ Taeniidae

↳ *Taenia*

↳ *Versteria*

↳ *Hydatigera*

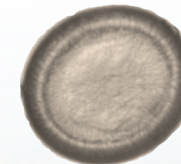
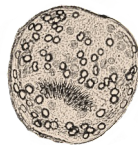
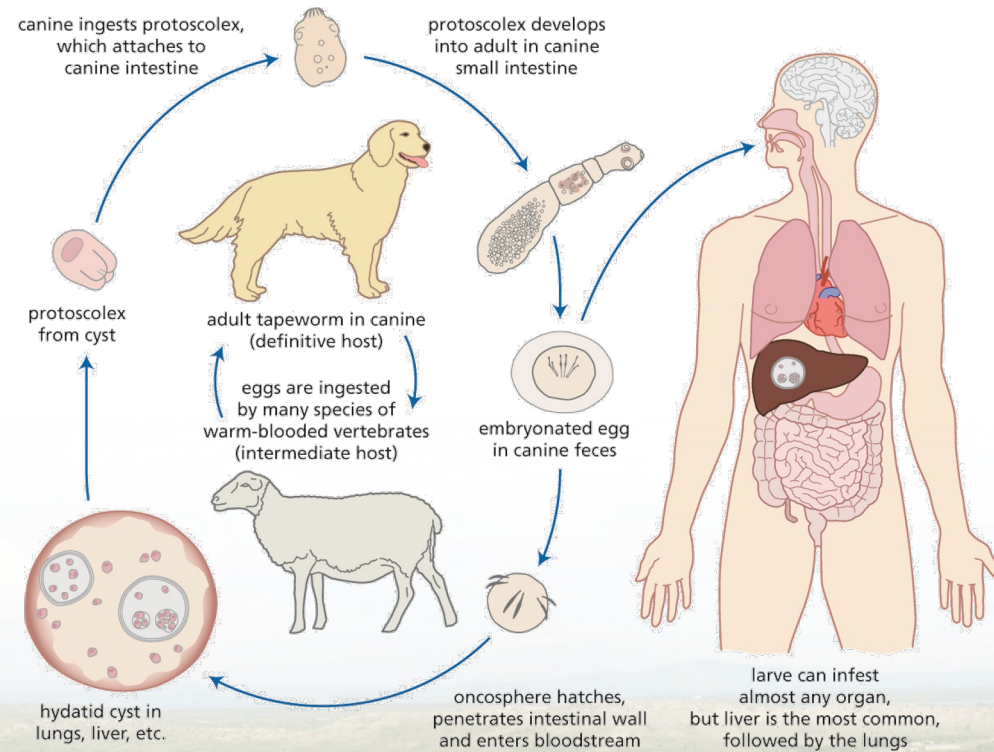
↳ *Echinococcus*







# *Echinococcus granulosus sensu lato* – life cycle





# *Echinococcus granulosus sensu lato* – complex



Species	Infectious to humans	Distribution
<i>Echinococcus granulosus</i> s.s.	yes	<b>worldwide</b>
<i>Echinococcus equinus</i>	yes	Eurasia, <b>Africa</b>
<i>Echinococcus ortleppi</i>	yes	Eurasia, S-America, <b>Africa</b>
<i>Echinococcus canadensis</i>	yes	Eurasia, America, <b>Africa</b>
<i>Echinococcus felidis</i>	?	<b>Africa</b>

causative agents of  
cystic echinococcosis (CE)

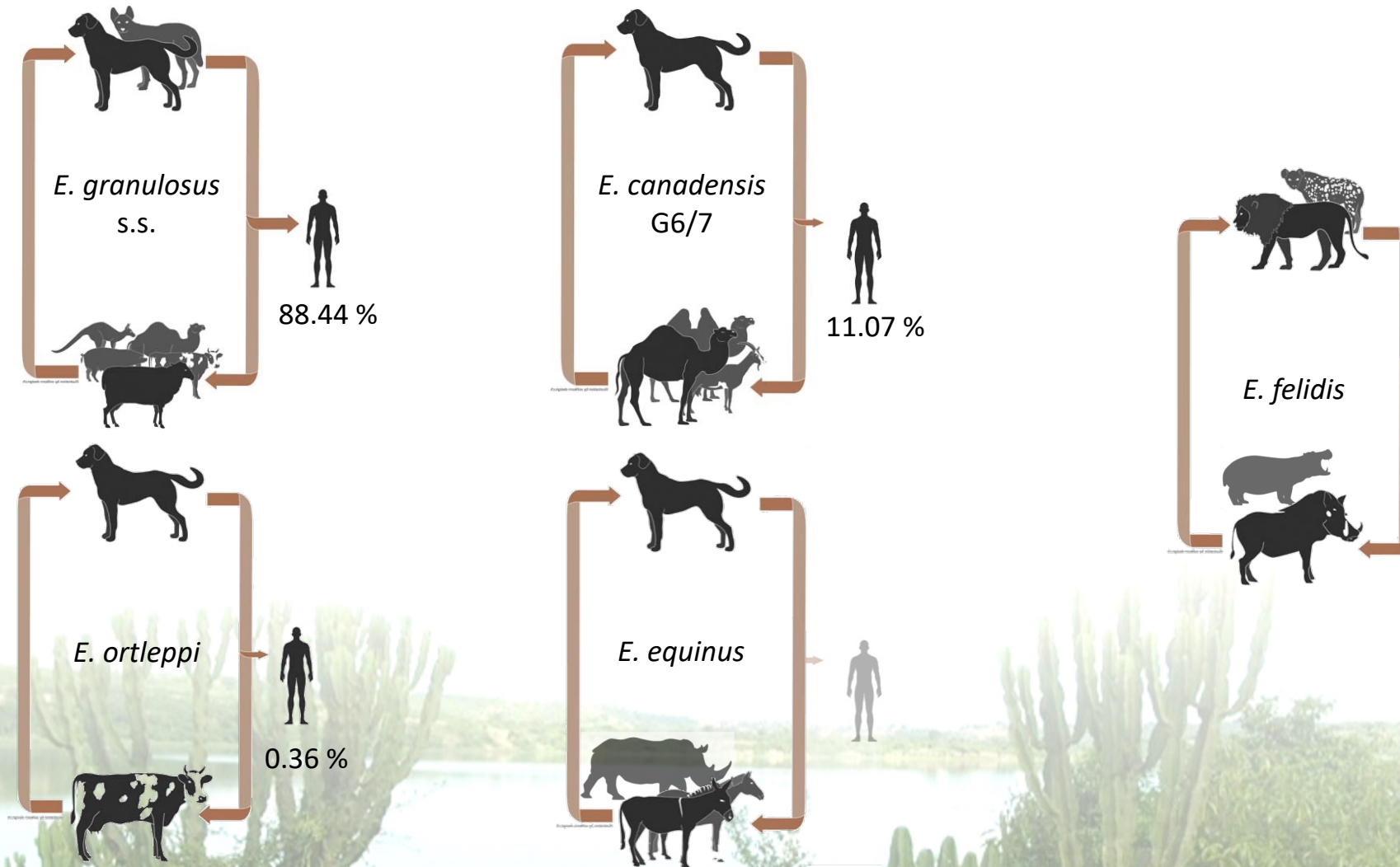


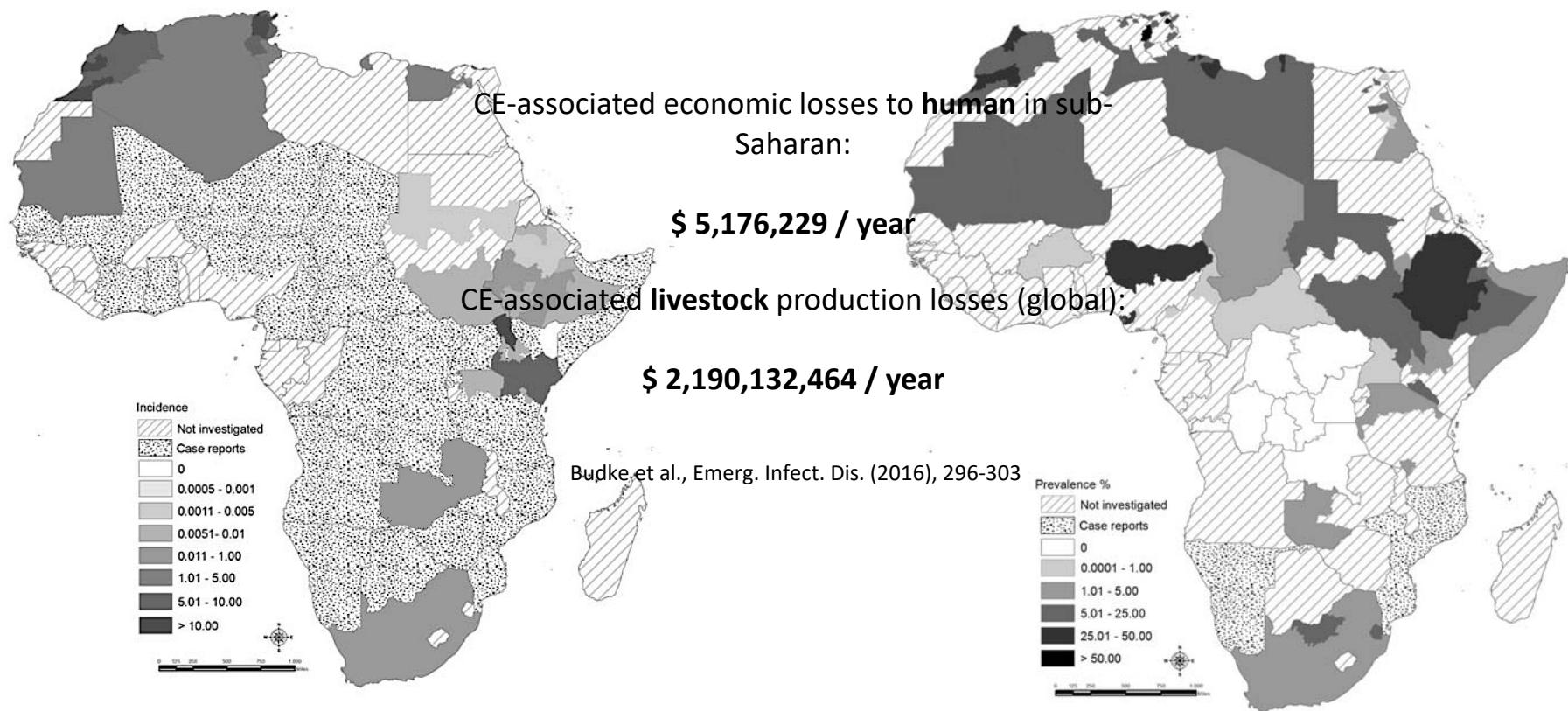
CE in liver and lung of sheep





# *Echinococcus granulosus* s.l. – life cycles





CE in human

CE in livestock





# Reasons for CE in Africa







# Reasons for CE in Africa





Future forecast

arable farmland



pastureland for cattle





Future forecast

pastureland for cattle

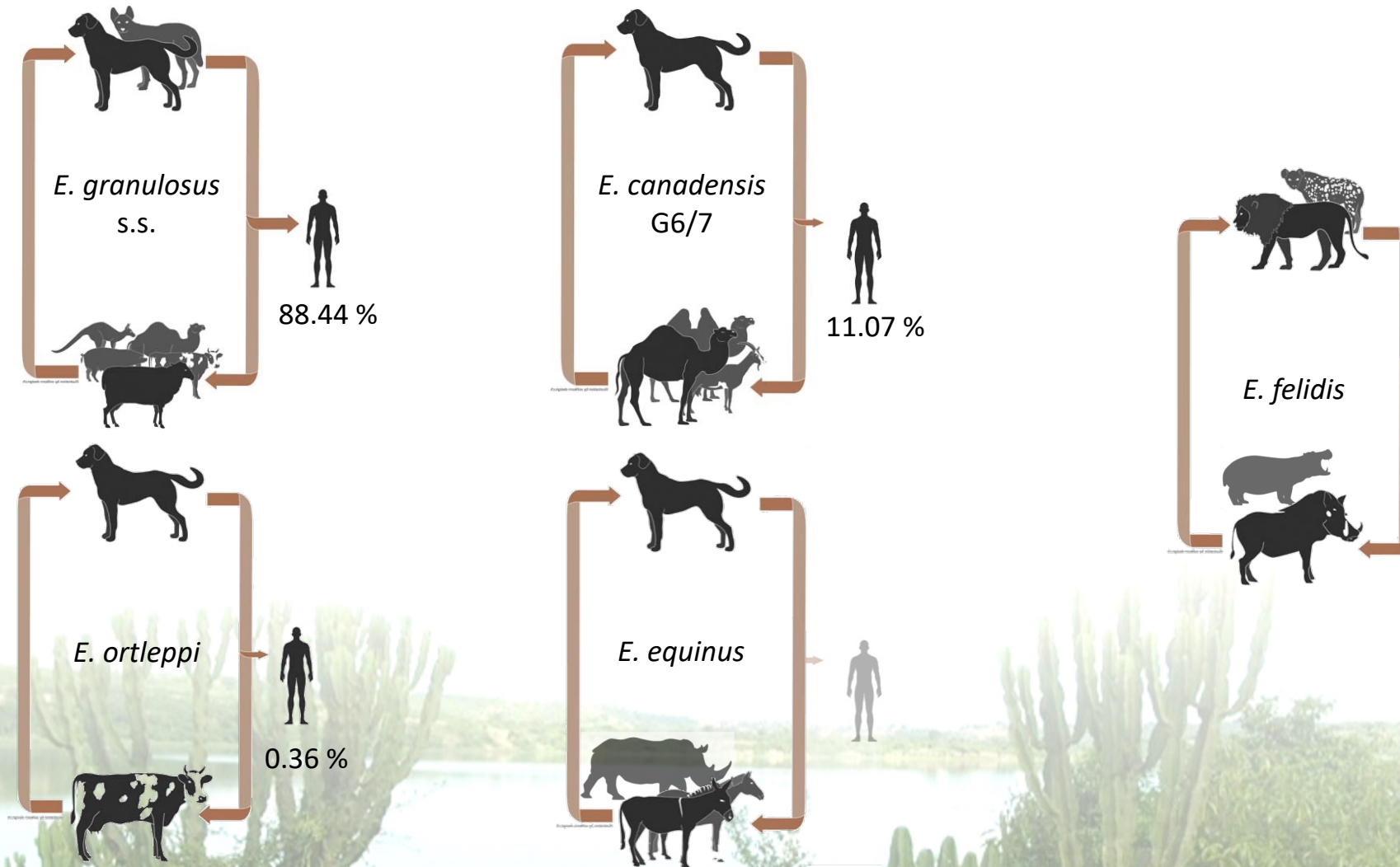


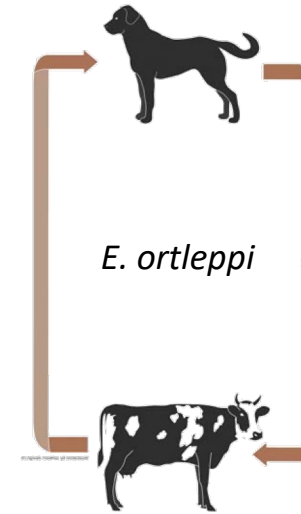
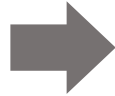
pastureland for sheep





# *Echinococcus granulosus* s.l. – life cycles

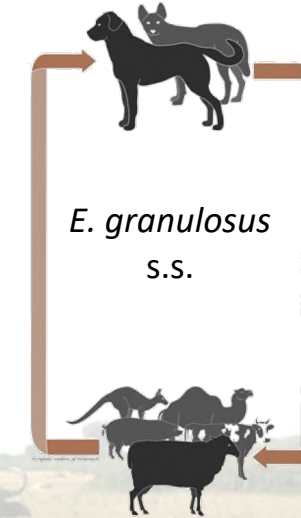




0.36 %



increase in  
prevalence  
=> primarily  
economic impact



88.44 %

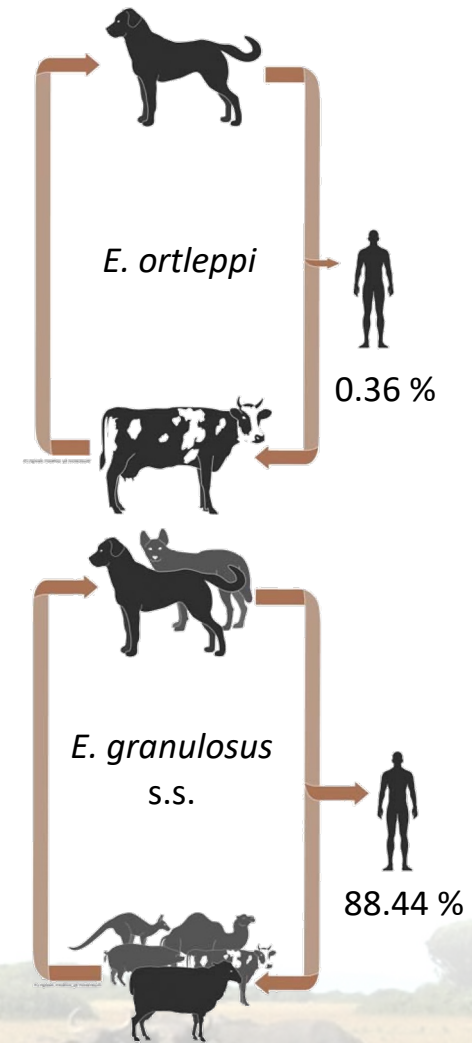


increase in  
prevalence  
=> economic &  
medical impact





- Regular prevalence studies to detect increases at an early stage (Slaughterhouse surveys, Questionnaires, ...)
- Deworming campaigns of the dogs
- **Education** of people about the disease and life cycle





# Research initiative – *Echinococcus* spp.



2009-2018

Cystic Echinococcosis in Sub-Saharan Africa Research Initiative

**DFG** Deutsche  
Forschungsgemeinschaft  
German Research Foundation



2022-2025 (-2030)

Transmission Ecology and Risk Factors for Cystic Echinococcosis  
in Sub-Saharan Africa

**DFG** Deutsche  
Forschungsgemeinschaft  
German Research Foundation





THANK YOU

