The impact of pig farming practices on the persistence of cysticercosis

Background : Cysticercosis is a parasitic zoonosis caused by *Cysticercus cellulosae* transmitted by contaminated food or fecal material.

Dessin : Antso Andrianary

Statistical Question : what is the prevalence of pig cysticercosis in Itasy region through time?

Mechanistical Question : how do pig farming practices impact the persistence of cysticercosis in Itasy region?

Aknowledgements : all instructors and mentors of E2M2_2019, Hélène GUIS , Angelo ANDRIANIAINA

Presented by : Herilantonirina S. RAMAROSON
University of Antananarivo, Department of Sciences, Medical Biochemistry
Institution : FOFIFA / DRZVP

what is the prevalence of cysticercosis in Itasy region through time?

- **Response variable:** pres_cyst (presence of cysts in pig)
- **Predictor variables:** farm_p (pig farming practice), race of pig, pig feed, latrine_p (presence of latrine), date

- **Family:** binomial
- **Link:** logit
- **Hypothesis**: the prevalence of pig cysticercosis is increasing through time
- **R_code:** *glm(pres_cyst~ farm_p+ race+alimentation+latrine_p+date, family="binomial", data = dat_cyst)*

how do the pig farming practices impact the persistence of cysticercosis in Itasy region?

States

- ✓ $S_{cl.}$: susceptible pigs in clostration
- ✓ $S_{div.}$: susceptible pigs in divagation
- ✓ $S_{h.}$: susceptible human

- ✓ $I_{cl.}$: infected pigs in clostration
- ✓ $I_{div.}$: infected pigs in divagation
- ✓ $I_{h.}$: infected human

Process

- ✓ $\mu_{1 \text{ et } 2}$: new pigs introduced
- ✓ μ_3 : in migration
- ✓ $\beta_{1 \text{ and } 2}$: contamination by eggs
- ✓ B_3 : contamination by meat

- ✓ ω : Treatment
- ✓ $\delta_{1 \text{ and } 2}$: death rate
- ✓ δ_3 : out migration

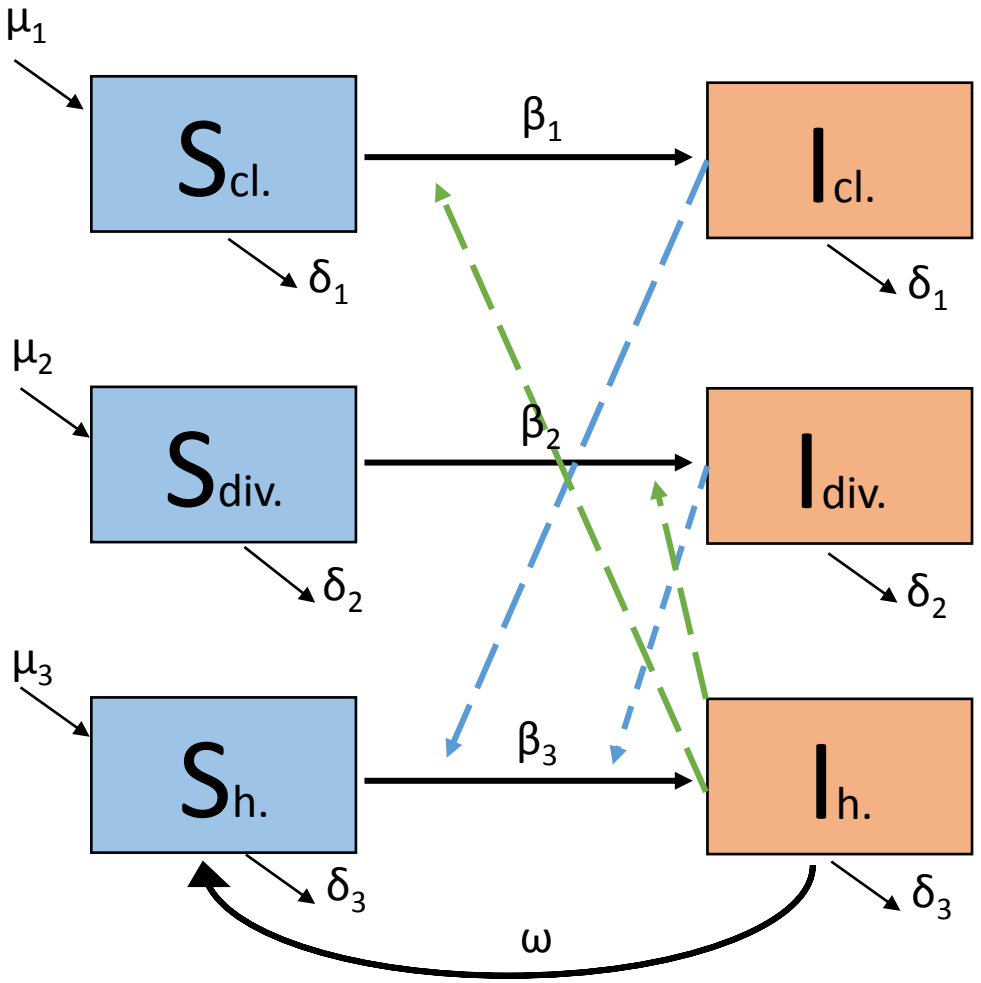
in pen

Pigs in clostration (cl.)

roaming

Pigs in divagation (div.)

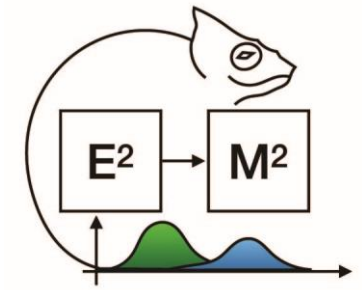
Human (h.)



Next step

- Data collection
- Simulate the mechanistic model and test different parameter values
- Try to fit the model to the data collected

Dessin : Antso Andrianary



Thanks!