STUDY OF THE SEASONAL VARIATION OF GUT MICROBIOTA IN MALAGASY FRUIT BATS

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Background: While understudied in Malagasy fruit bats, gut microbiota contribute to the proper functioning of the body by participating in immune defense.

Statistical question: What factors influence the species richness of gut microbiota in Malagasy fruit bats?

Dynamical model question: How does food availability modulate gut microbiota's species richness in Malagasy fruit bats?

Acknowledgment: E2M2 instructors, mentors, all students

STATISTICAL MODEL

What factors influence the species richness of gut microbiota in Malagasy fruit bats?

- R function: glm(species_richness~season+food_variability+age+sex, family="poisson")

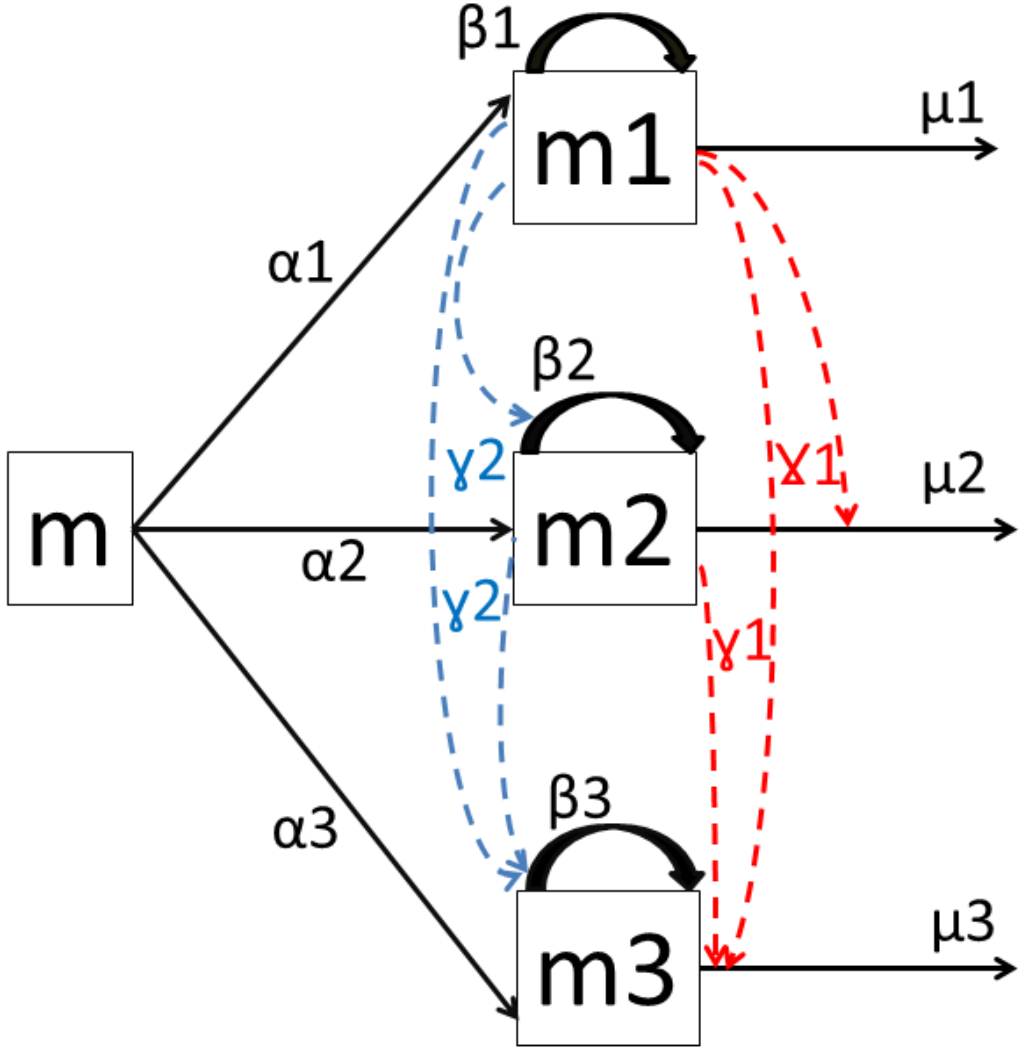
- Response variable (y): gut microbiota species richness

- Predictor variable (x): Season, food avalaibility, age, sex
- Distribution: Poisson, Link: Natural Log
- Hypothesis: Species richness of gut microbiota rises when the food resource is varied.

- Data collection: Monthly collection of feces for laboratory analysis

DYNAMICAL MODEL

How does food availability modulate gut microbiota's species richness in Malagasy fruit bats?



States:

m: microorganisms from food

m_i: species of microorganism

Processes:

α_i: colonization of microorganisms from foods to the intestine

β_i: multiplication of microorganisms rate

$\gamma 1$: interspecies interaction (-)

$\gamma 2$: interspecies interaction (+)

μ_i: extinction rate

NEXT STEPS

1. Continue data collection in the field

2. Carry out my lab work

3. Do my statistical and mechanistical model framework and fit in it on my data

THANK YOU!