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DPZ

B2
Social and fitness benefits of curiosity in nonhuman primates

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Motivation

- Curiosity improves learning via information acquisition.
- Dimensions of curiosity should co-vary with a species' life history and sociality, but conclusive studies testing this assumption are still missing.

Preliminary work:

- Performance in cognitive tasks co-varies with fitness benefits in gray mouse lemurs[1,2].
- Personality and social information facilitate cognitive performance in group-living species[3,4].

Kaplan-Meier Curve for Survival
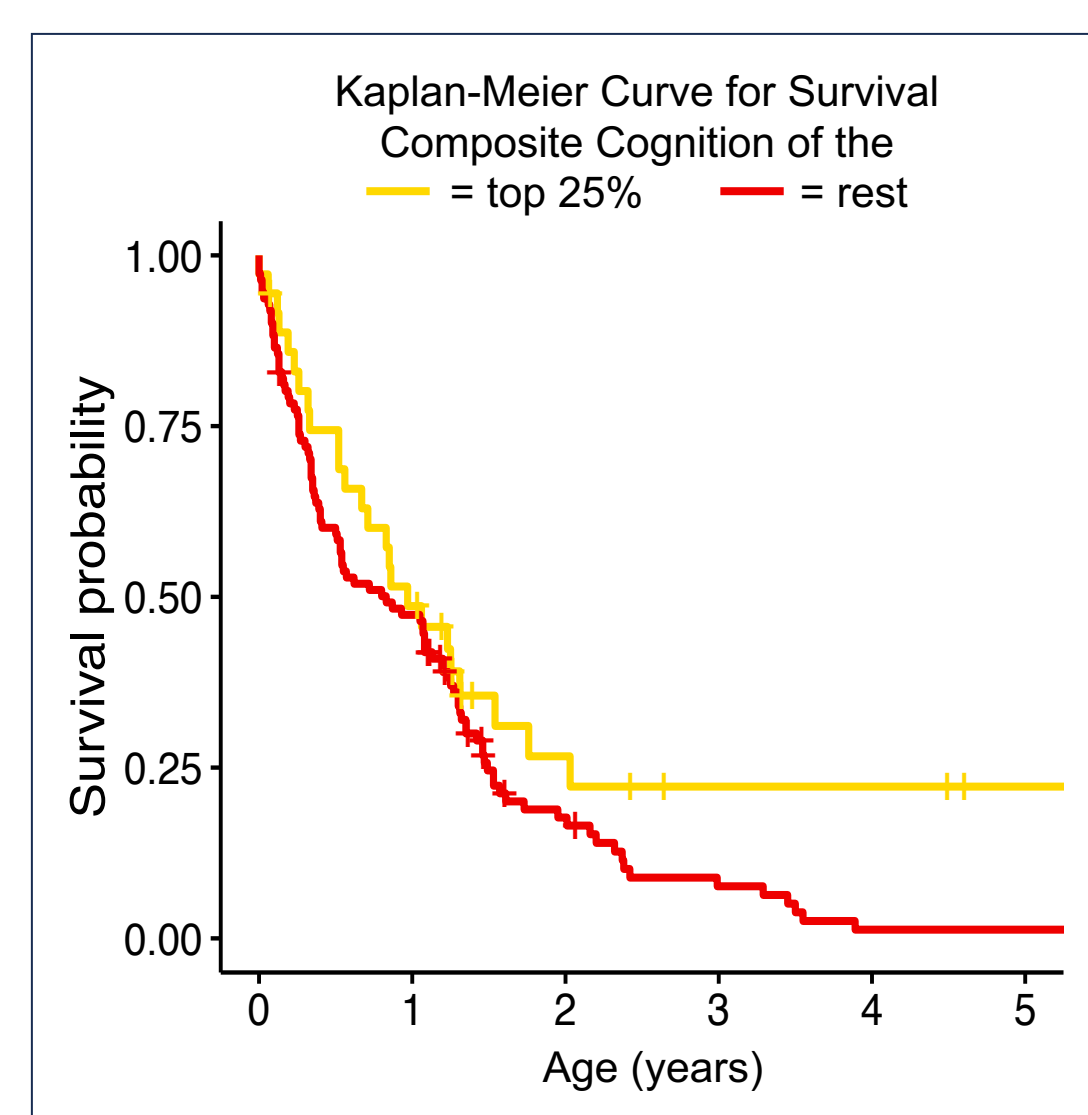Composite Cognition of the
— = top 25%   — = rest

Fig. 1: Cognitive performance co-varies with longevity in gray mouse lemurs

Objectives

- Variation in curiosity co-varies with learning, fitness benefits and sociality, because only in group-living species naïve individuals use social information to infer what to be curious about.
- According to life-history theory, we expect a stronger association between curiosity and learning in species with a fast life history.

➢ This project will speak to the question **Why are we curious?**
➢ In examining factors eliciting curiosity, this projects also addresses the question **When are we curious?**

?   Is curiosity related to learning, fitness benefits as well as sociality and in two wild lemur species?

Methods

- Establish a test battery to operationalize curiosity in both species (Fig. 2A)
- Use same cognitive tasks in both species (Fig. 2B & 2C)
- Gray mouse lemurs: test individuals and pairs, combine experiments with long-term demographic data to assess fitness proxies (body condition, survival)
- Redfronted lemurs: combine experiments and behavioural observations
- Apply computer vision techniques to automatically track lemurs and their interactions with the test apparatuses from videos[5,6] (Fig. 2D)

Hypotheses:

- Learning performance co-varies with variation in curiosity.
- Variation in curiosity co-varies with sociality.

Fig. 2: (A) redfronted lemur displaying curiosity, (B & C) a gray mouse lemur and a redfronted lemur at testing apparatus for reversal learning, (D) a redfronted lemur manipulating a feeding apparatus, frames indicate bounding boxes used to automatically identify and track lemurs and boxes.

Cross-project collaborations

- Key collaborations with projects that focus on **ecologically valid settings** in experimental designs shared with **A1**, **A3**, **B4**.
- Shared focus on **individual differences** in curiosity with **A3**, **A4**, **B1**, **C1**.
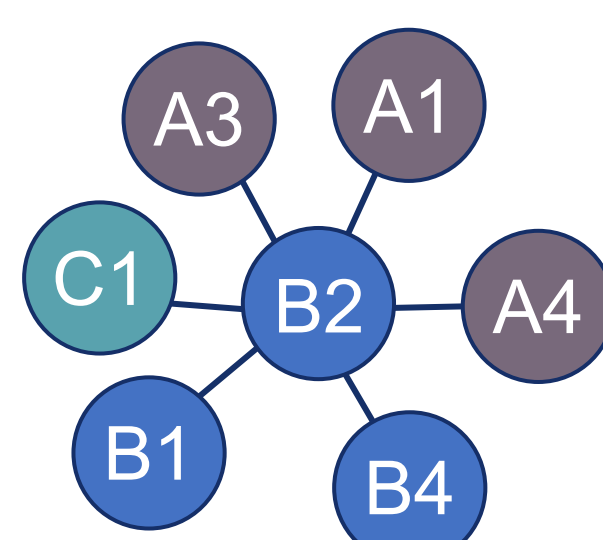

Fig. 3: Key collaboration partners of doctoral researcher working on Project B2

Potential PhD projects

1. Understanding the link between curiosity, learning and fitness in gray mouse lemurs.
2. Interplay between curiosity, sociality and learning in redfronted lemurs.
3. How does curiosity and play facilitate learning about the non-social and social environment during the ontogeny of redfronted lemurs?

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