

# Applied Statistical Methods - Exercise 8

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## Problem 1: Repeated Measurements Data

Simulate a dataset with repeated measurements of **Body Weight** and **Breed**. The following dataset can be used as a basis:

```
## https://charlotte-ngs.github.io/asmss2022/data/asm\_bw\_flem.csv
```

The generated dataset should have the following properties

- For every observation, the ID of the animal, its **Body Weight** and its **Breed** should be contained in the dataset.
- Each animal of the given basis dataset should have 5 repeated observations of **Body Weight** and **Breed**.
- The phenotypic variance of **Body Weight** within the repeated observations of one animal should be 50% of the total phenotypic variance of **Body Weight** determined from the given basis dataset.

### Your Tasks

- Analyse the generated dataset with an ANOVA
- Try to see whether you can re-cover the used input data in the results of the analysis

## Problem 2: Random Effects Model

Analyse the dataset generated in Problem 1 with a random effects model using the package `lme4`. If you had difficulties to solve Problem 1, then you can also use the following dataset.

```
## https://charlotte-ngs.github.io/asmss2022/data/asm\_ex08\_p01\_rep\_obs.csv
```