

# Leaf-litter decomposition

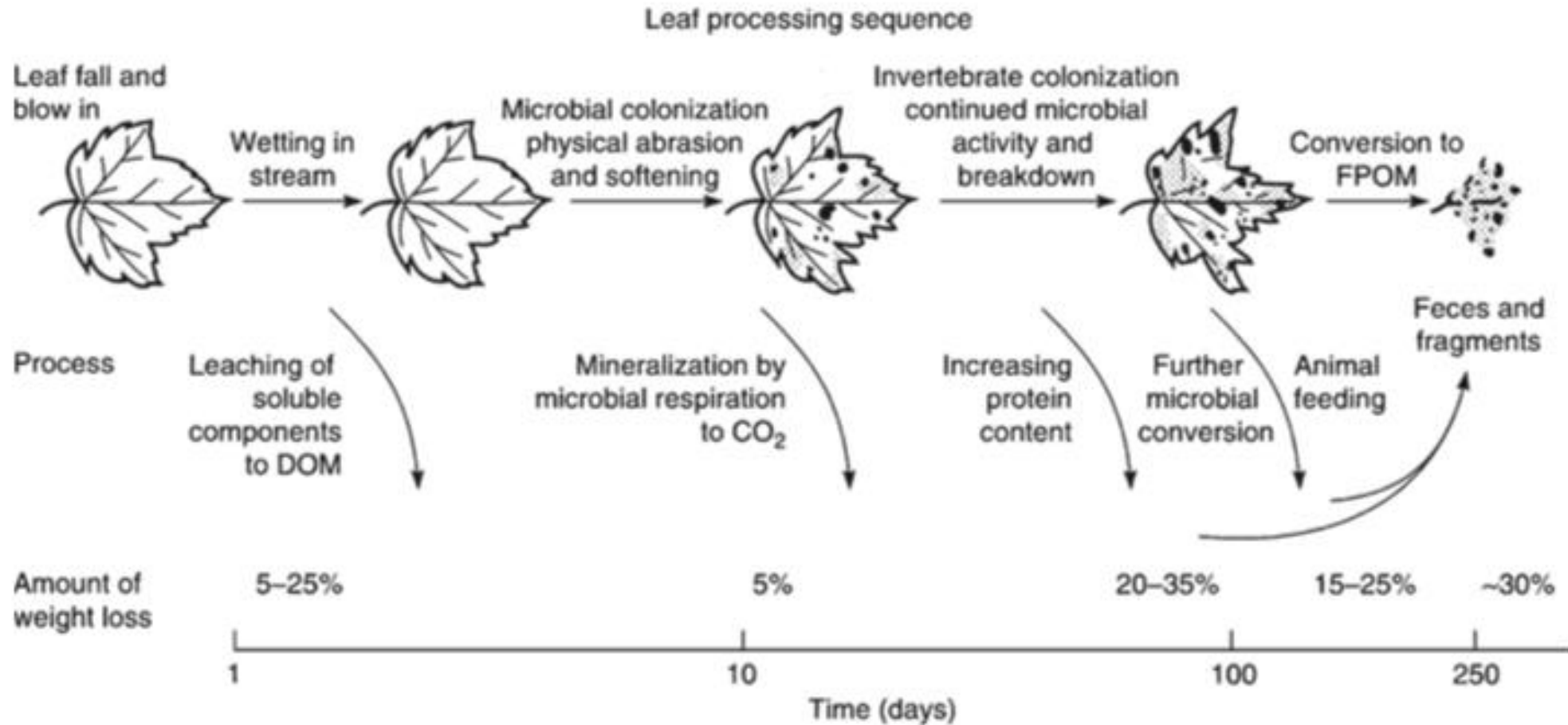
A photograph of a small, shallow stream flowing through a forest. The water is clear and moves over dark, mossy rocks, creating small white rapids. The banks are covered with a thick layer of fallen autumn leaves in shades of yellow, orange, and red. Bare tree branches and some green foliage are visible in the background, suggesting a late autumn setting.



# Report

- Choose a single treatment comparison. For example: light vs dark!
- The title is important! Make it meaningful and precise.
- In the Introduction focus on the science behind the experiment, no need to explain that this is part of the class. Provide background, cite important literature, but don't be too general (Ecology etc). Provide hypothesis. Be very specific about them: We hypothesize that...
- The Introduction and Methods can be single sections – no subsections.
- Methods provide key information, be precise, include statistics
- Citations – appropriate choice, consistent in text formatting, include reference section at the end. Look at publications for referencing style.

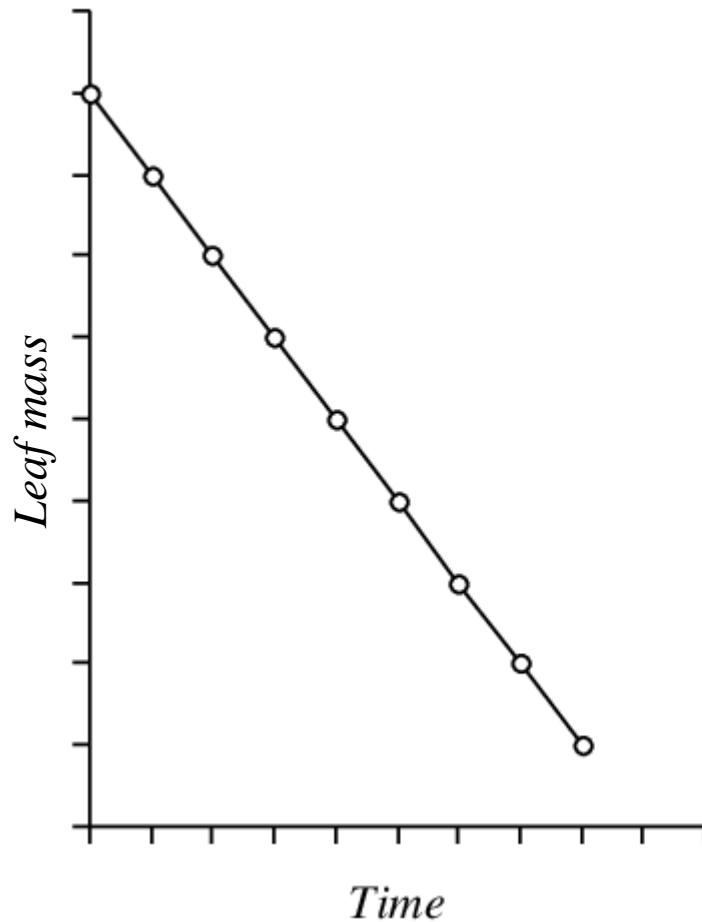
# Leaf-litter degradation



# kinetics

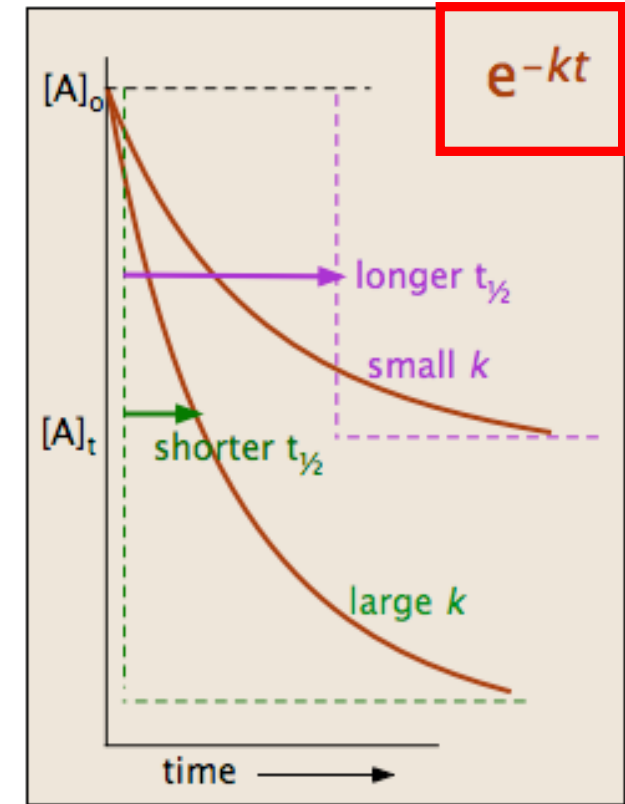
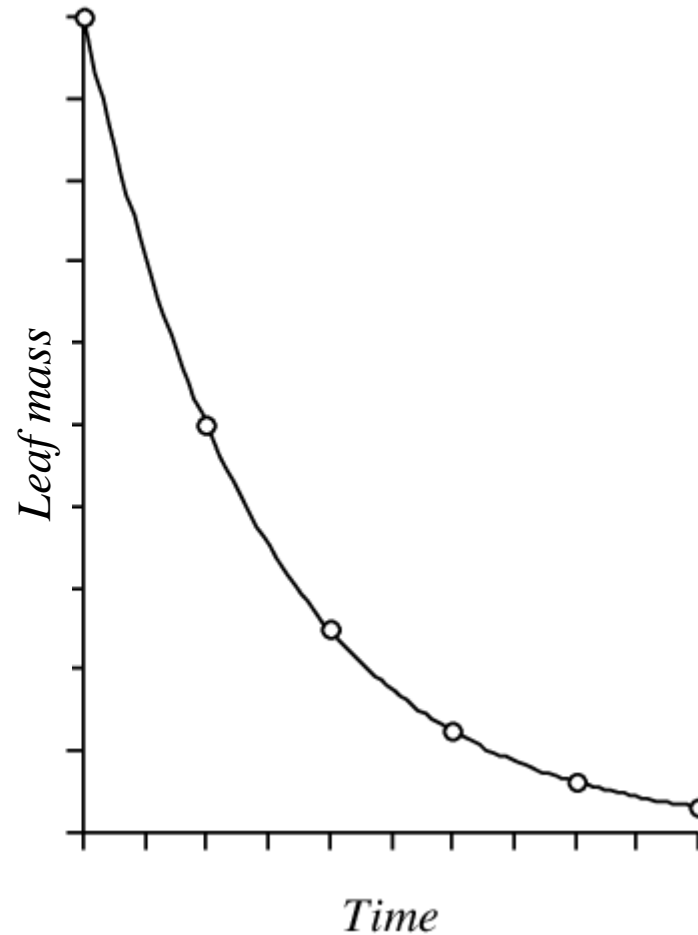
## *Zero-order kinetics*

A constant amount of mass is removed per unit time



## *First-order kinetics*

A constant proportion of mass is removed per unit time



Half-life time  $t_{1/2}$   
(time it takes to reach  
50% of initial DM)

# How to estimate decomposition rate (k)

1) Zero-order kinetics: regress DM against days of exposure  
The slope of the linear regression line (negative) equals the decomposition rate constant k

2) First-order kinetics: Regress DM (y-axis) against natural log of days of exposure (x-axis)  
The slope of the regression line (negative) equals the decomposition rate constant k

=> Compare fits of zero- and first-order kinetics:  $R^2$

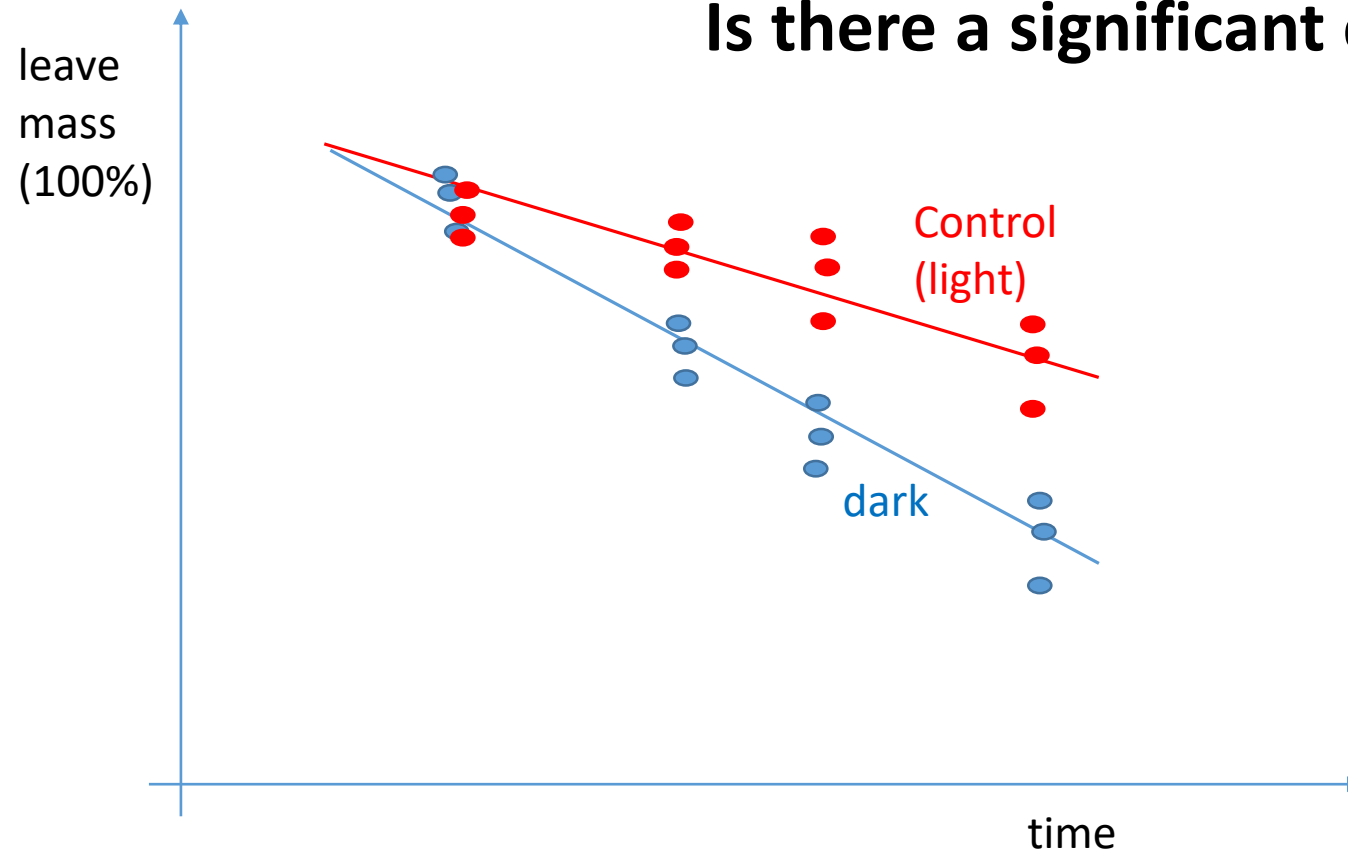
```
R:  mod1<-lm(weigh~time)
    summary(mod1) -> R2

    mod2<-lm(weigh~log(time))
    summary(mod2) -> R2
```

3) Is there a significant effect of treatment?



Is there a significant effect of treatment?



R:

```
lm(weight~time*treatment)
```

```
library(rstatix)
```

```
anova_table(weight~time*treatment)
```