Model Based Statistics in Biology.
Part III. The General Linear Model.
Chapter 10 GLM. ANOVA

ReCap. Part I (Chapters 1,2,3,4) ReCap Part II (Ch 5, 6, 7) ReCap Part III (Ch 9) 10.1 One way ANOVA with Two Categories (t-test) 10.2 One way ANOVA, Fixed Effects 10.3 One way ANOVA, Random Effects

on chalk board

ReCap Part I (Chapters 1,2,3,4)
Quantitative reasoning: Example of scallops,
which combined models (what is the relation of scallop density to substrate?)
with statistics (how certain can we be?)
ReCap Part II (Chapters 5,6,7)
Hypothesis testing uses the logic of the null hypothesis to make a decision about an unknown population parameter.
Estimation is concerned with the specific value of an unknown population parameter.
ReCap (Ch 9) The General Linear Model is more useful and flexible than a collection of special cases.
Regression is a special case of the GLM. We have seen an examples with the explanatory variable X fixed, with the explanatory measured with error, and for a non-linear (exponential and power law) relations of response to explanatory variable.

Today: ANOVA as a special case of the GLM

Wrap-up

Comparison of ANOVA with regression.
Regression is a special case of the general linear model. The response and explanatory variable are both on ratio (or interval) types of scales. In simple linear regression, the response variable has a straight line relation to the explanatory variable.
t-tests compare two means. They are another special case of the general linear model.

As with regression we have a response variable on a ratio (or interval) type of scale. But now the explanatory variable will be on a nominal scale.

It will be a series of classifications. E.g., 2 drug treatments.

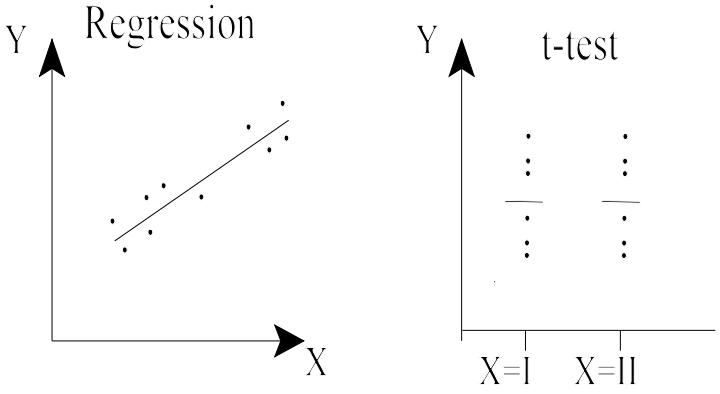

Figure L15aF1

X is classification (nominal scale) variable, rather than ratio scale.

The relation of response (Y) to explanatory variable (X) is described as a series of means in ANOVA, rather than as a slope used in regression.