Course title	**Biostatistics for non-statisticians: good practices, misuse and pitfalls.**
Organizer(s)	Romain-Daniel Gosselin, Biotelligences LLC
	1 ECTS

Summary

The course aims to explain the importance of biostatistics for science reproducibility/reliability and teach good practices. The lectures are tailored to biologists and concentrate on logic thinking behind biostatistics. Particular emphasis will be placed on experimental design (power, independence, randomization), analysis (multiple comparisons, repeated measures, limitations of p-values, choosing the appropriate tests) and presentation (graphical display, errors, principal information to disclose).

Course schedule 2014
- November 3, 4 and 6 from 9-11h
- November 5 and 12 from 15-17h

Location   Salle APP, DNF-UNIL, Rue du Bugnon 9 (ground floor left), Lausanne

Content of course sessions

Session 1: Biostatistics: why and when?
- A short (and digestible) introduction to biostatistics
- Statistical inference: testing an hypothesis
- Statistical design: power, independence of variables, randomization

Session 2: Analysis
- Selection of statistical tests
- Parametric vs. non-parametric tests
- Multiple comparisons: ANOVA and beyond
- Repeated measures
- The problem of p-values

Session 3: Data presentation
- Graphical display
- Error-bars: *the dos and don'ts*
- Which information to disclose?

Session 4: Biostatistics in neuroscience, an overview
- Molecular neuroscience
- Neuropharmacology
- Behavioral neuroscience
- Electrophysiology

Session 5: Evaluation and conclusion
- Presentation slot (see Evaluation paragraph)
- Short conclusion: forget p-values! Introduction to the New Statistics

Evaluation

Groups of 3-4 students will have to critically analyze the statistics displayed in an article given by the organizer. The groups will have one week to perform the analysis (between sessions 4 and 5). During the "presentation slot" (session 4) the groups will present their analysis (10 minutes oral presentation followed by 5 minutes of questions). A "statistical review form", corresponding to the written counterpart of the presentation, will have to be returned to the organizer at the beginning of session 5.

Registration   The course is limited to 20 participants. Register until October 24, 2014 by writing a mail to lndscourses@gmail.com (with your supervisor in copy) and stating the course title as subject.