

# Biostatistics for non-statisticians: good practices, misuse and pitfalls.

**Organizer(s)** Romain-Daniel Gosselin, Biotelligences LLC & Precision Medicine Unit, CHUV

**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: no heavy mathematics. Particular emphasis will be placed on caveats about misconceptions and misuses in experimental design, analysis and disclosure.

**Schedule and location and registration in 2021**

- **Session 1** – November 18: 13-17h
- **Session 2** – November 25: 13-17h
- **Session 3** – December 2: 13-17h

The course will either take place online via zoom livestream or onsite in the Petit Auditoire of the DNF-UNIL, Rue Bugnon 9, Lausanne (Covid certificate required!). Please register via the link (<https://tinyurl.com/BiostatsA2021>) and indicate which course format you prefer. Majority vote will count ... The course is limited to 16 participants; first come – first served ...

**Content of course sessions**

- **Session 1:**
  - General introduction, raw concepts
  - A short (and digestible) introduction to frequentist inference
  - Design beyond sample size
  - Misconceptions and misuse of p-values
  - Sample size: not too few and not too many
- **Session 2:**
  - Choosing a test
  - Caveats with multiple comparisons
  - Correlation and the regression multiverse
  - Stop the “bar graph and SEM” galore
- **Session 3:**
  - Bits of epidemiology
  - A concrete example: statistics in genomics
  - How not to sweep outliers and missing data under the rug
  - Equivalence testing and the New Statistics

**Evaluation** Collective and group-organized problem-based learning (PBL) with made-up examples during the course. Collective PBL will be cases we will all discuss together. For group-based PBL, groups will have 10 min to prepare a case and 5 min to present it.