

# BioISI Research Seminar

**Unobserved heterogeneity in demography, epidemiology, ecology, and microbiology...**

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Unobserved heterogeneity was introduced in 1920 as an individual hazard modifier. The concept was termed frailty in demography to describe variation in individual longevity (by Vaupel and co-authors in 1979), and has been incorporated in widespread methods for survival analysis. As the frailest individuals are removed earlier from a heterogeneous group, mean hazards appear to decrease over time – cohort selection – leading to some of the most elusive effects in population sciences. Despite the accumulation of documented fallacies induced by cohort selection, the issue remains largely overlooked. I will expose the ubiquity of the phenomenon with examples of current interest in epidemiology, ecology, and microbiology: (1) Vaccines appear less effective in high-incidence settings. Are they, really? (2) What is the real effect of Wolbachia on mosquito susceptibility to dengue viruses? (3) As populations of bacteria are exposed to antibiotics, their mortality rates decline. Has cohort selection been considered? If time allows, I will discuss some implications of cohort selection in quantitative genetics.

**Host: Ana Nunes**

**(PBS-BioISI)**

**When: December 13 🕒 12h00**

**Where: Building C2, room 2.4.16**

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