



Ecotox Centre Seminar/Webinar invitation:  
**Systems biology in sentinel species:  
a case study and perspectives in ecotoxicology**

**Speaker:** Davide Degli Esposti, INRAE Lyon (France), RiverLy, Ecotox team

**When:** Tuesday February 20<sup>th</sup>, 2024, 16.00 - 17.00 CET

**Where:** Lausanne EPFL Room GC B1 10 ([map](#))

or Zoom <https://epfl.zoom.us/j/62827010021> (id: 628 2701 0021, code: Ecotox)

**Abstract:**

Environmental risk assessment of chemical mixtures is challenging because of the multitude of possible combinations that may occur. Biological approaches, such as active bio-monitoring to measure both bioavailable contamination and the biological responses of organisms exposed in natura, may provide valid complementary tools to chemical and ecological monitoring. The freshwater amphipod *Gammarus fossarum* has been established as a sentinel species to assess the contamination levels of a great variety of aquatic systems. Thanks to the advances in nucleic acid high-throughput sequencing and in mass spectrometry, proteogenomics has allowed developing the measurement of hundreds of proteins in this species.

In this talk, I will present some of the results of the research work we perform at the Ecotox laboratory of the Research Unit RiverLy at the National Institute of Agriculture, Nutrition and Environment (INRAE). I will show how data-driven protein network analyses may help to shed light on the molecular physiology of *Gammarus fossarum*, and on the molecular mechanisms involved in the response to chemical contaminants. The perspectives of this work in environmental proteomics and exposomics research will be also presented and discussed.

**Biopic:**



**Davide Degli Esposti** is Research Scientist at the French National Institute of Agriculture, Nutrition and Environment (INRAE). He applies -omics and network biology approaches to improve the understanding of molecular physiology and ecotoxicological mechanisms mainly in aquatic organisms. His current research questions focus on the molecular mechanisms involved in reproductive toxicity, metabolic disorders and individual vulnerability to environmental contaminants. In order to take into account the complexity of chemical mixtures, he experiments the exposure in aquatic ecosystems combining active biomonitoring, *in vitro* bioassays, *in vivo* proteomics and environmental chemistry approaches.