



Frédéric Touzalin, *WildHealth: from wildlife monitoring to preventing and mitigating the spread of zoonotic diseases and drug resistance*

The emergence of the highly infectious Covid-19 is suspected to be a zoonosis, originating from bats. Its consequences on public health highlight the importance of maintaining active epidemiological monitoring of wildlife to better understand the factors behind the emergence of diseases. However, such surveys are challenging due to the diversity of hosts and pathogens, and their complex interactions in natural ecosystems. Most wild species are not model species,

i.e. they are not mice, rats or yeasts, which is a major obstacle to studying the mechanisms that degrade their health, or the conditions that facilitate the emergence of pathogens or the spread of drug resistance genes. The recent availability of full genomes in many wild species opens a new avenue for understanding wildlife molecular regulatory systems.

This DOROTHY project aims to set up a framework for monitoring the health of bat populations in order to gain a better understanding of the conditions under which zoonoses emerge. By combining the gene expression profile of wild bats with the microbial diversity found in their saliva or faeces and their blood immunological parameters, the fellow aims to understand the interaction between the immune response of bats and their environment. This involves monitoring the environment of the populations studied, as well as their biological, demographic and microbiological parameters. The main outcome will be the development of a methodological approach for epidemiological monitoring of wild populations, a tool that could be consequently used by veterinarians, epidemiologists, public decision-makers, and conservation NGOs. In this way, WildHealth will help us avoid future public health crises by considerably increasing our knowledge of the mechanisms by which zoonotic diseases emerge.

As part of the fellowship activities, in 2023 the fellow presented the preliminary epidemiological studies on bat lyssaviruses in Brittany at [GALPHAS 2023](#), a collaborative meeting for rabies researchers held at the University of Glasgow. Additionally, a workshop was organised during the Regional Education Biennial (Lycée expérimental, St Nazaire, France) for all secondary school teachers in Brittany, aimed to introduce them to bat biology and public health issues in the context of Covid-19. The main educational goal of this event was to equip teachers with sufficient background and current scientific knowledge on the subject of zoonoses and the risks associated with bats and wildlife in general.