

As shown by recent COVID-19 pandemic, extra-respiratory complications of respiratory viruses may lead to severe neurological complications. Lactoferrin is a part of innate immunity, which plays an important role in immune regulation and defence mechanisms against bacteria, fungi and viruses. Lactoferrin can be considered not only a primary defense factor against mucosal infections, but also a polyvalent regulator which interacts in viral infectious processes. Its antiviral activity, demonstrated against both enveloped and naked viruses, lies in the early phase of infection, thus preventing entry of virus in the host cell. Recently, much effort has been devoted to the development of biomedical applications of nanoparticles. The use of nanoparticles-based antiviral agents has several advantages, especially for noble metal nanoparticles showing relative low toxicity and stability.

The idea of this project is to test *whether conjugates of lactoferrin with nanoparticles can become both effective antivirals as well as stimulators of the local antiviral response within the mucosal tissue of the nasal cavity. Furthermore, the aim of this project is to test whether such constructs can protect the olfactory route from viral infection, or stimulate effective antiviral response protecting both the olfactory nerve and the olfactory bulb from infection and/or inflammation and further extra-respiratory complications.*