NOVEL PROPHYLACTIC AND THERAPEUTIC VACCINES AGAINST IMPORTANT VIRAL AND BACTERIAL INFECTIONS

We will generate viral live attenuated and replication-defective vectors based on herpes simplex virus type 1 (HSV-1) for development of vaccines against viral infections caused by HSV-1 and HSV-2 and the bacterial infection caused by *Mycobacterium tuberculosis.* In particular, we will generate novel vectors containing several mutations in genes relevant for neurovirulence, latency or replication in order to increase the vaccine safety, and expressing the HIV Tat peptide as immunomodulatory molecule to increase and elicit the protective immune responses against herpes infections and tuberculosis. These infections are wide-spread in the global poplation, are persistent and can cause severe diseases in immunocompromised patients, in elderly and in pediatric subjects. Vaccines against these infections are not available now. The expected results may give an important contribution to the field of vaccine development for important diseases such as those caused by herpes simplex viruses and tuberculosis.

GOALS

- generation and characterization of live attenuated vectors and replication-defective vectors based on HSV-1 expressing HIV Tat as immune modulatory molecule for the development of vaccines against HSV-1 and HSV-2 infections
- generation and characterization of live attenuated vectors and replication-defective vectors based on HSV-1 expressing *Mycobacterium tuberculosis* antigens and HIV Tat as immune modulatory molecule for the development of vaccines against tuberculosis (TB)
- safety, immunogenicity and efficacy studies in small animal models (mice, guinea pigs) of the vaccines against infections caused by HSV-1 and HSV-2 and selection of the best vaccine for future phase I clinical development
- safety, immunogenicity and efficacy studies in mice of the vaccines against infections caused by *Mycobacterium tuberculosis* and selection of the best vaccine for clinical development.

INSTRUMENTS AND METHODS

Microbiology, immunology, molecular and cellular biology techniques. Standard techniques for animal manipulation, inoculation sacrifice and analysis of immune responses according to national guidelines. The instrumentation used is the standard for molecular biology, microbiology, immunology and cell cultures. For animal studies experiments are carried out in the centralized animal facility of the University of Ferrara according to present guidelines.

SUBJECTS

Microbiology, molecular biology, cellular biology, immunology.

WORKING GROUP

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COLLABORATIONS

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