

## **ROLE OF T CELL RESPONSES IN THE CONTROL OF WEST NILE VIRUS INFECTION**

West Nile virus (WNV) infection is asymptomatic in most of individuals. However, the infection may lead to severe encephalitis and death especially in elderly. No drugs or vaccine are available to prevent WNV infection or treat symptomatic patients. Several studies in murine models have shown the importance of CD8 T cell responses for the control of infection. However, protective immune responses have not been identified and characterized yet. As this information is key for the identification of effective vaccine antigens and for vaccine development, the main goal of this project is the characterization and identification of protective WNV CD8 T cell responses in different groups: uninfected healthy control subjects (HC), previously WNV infected individuals with asymptomatic infections (ASYM), previously WNV infected individuals with symptomatic infections (SYM) and subjects with ongoing WNV asymptomatic infections (acute infection – AC), detected during blood donation procedures. The expected results may contribute to the identification of CD8 T cell responses developed in asymptomatic infection (protective responses) and to the development of vaccines and/or immunotherapies capable to elicit such protective immune responses.

### *GOALS*

- Identification of WNV epitope-specific CD8 T cell responses
- Characterization of WNV epitope-specific T cell responses (i.e. cytokine profiles and poly-functionality)
- Identification of correlates of protection and protective epitopes in subjects who have controlled the infection
- Phenotypic characterization of WNV-specific T cell responses (differentiation, expression of specific inhibitory markers, clonality of T cell receptor, transcriptional profile).

### *INSTRUMENTS AND METHODS*

Biochemical, immunological and microbiological methods including purification and cultivation of peripheral blood human cells, cytofluorimetry, analysis of cytokines production/release, analysis of fatty acid and sugar metabolism, analysis of RNA and protein expression. Instruments used in this study are standard instruments for cellular and molecular biology, virology and immunology.

### *SUBJECTS*

Immunology, microbiology and molecular biology.

### *WORKING GROUP*

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### *COLLABORATIONS*

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