ImmunoTools *special* Award 2014

Raphaëlle Riou, PhD-student

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Contribution to the study of Natural Killer cells implication in the control of Human cytomegalovirus infection

Human Cytomegalovirus (HCMV) infection reaches a high worldwide prevalence. Primary HCMV infection usually remains asymptomatic in immunocompetent individuals. However, like all herpes viruses, HCMV has the ability to establish lifelong persistence. This latency state is closely related with the immune system. While HCMV infection is well controlled by healthy subjects, primary HCMV infection or viral reactivation is associated with a high morbidity rate in HIV or transplanted patients. Another major complication of HCMV infection concerns congenital infection that can leads to severe sensorineural malformations in fetuses and newborns.

One of the major research topics of our team focuses on the NK cell biology in the context of hematopoietic stem cell transplantation (HSCT). Particularly, we study the NK cell contribution to the graft-versus-leukemia effect and to the control of HCMV infection after allogeneic transplantation. In line with this, we have recently shown that NK cells expressing inhibitory KIR receptors are involved in the control of HCMV infection, using an *in-vitro* model based on HCMV-infected dendritic cells (Djaoud Z. *et al*, J Immunol, 2013).

To further investigate the role of NK cells during the course of HCMV infection, we have established, in collaboration with clinicians from Nantes university Hospital, a rare biobank from immunocompetent patients who develop severe symptomatic HCMV infection. The aim of my thesis project is to explore the immune polymorphism of these patients, in comparison with HCMV seronegative and seropositive healthy individuals. We are performing a phenotypic study targeting innate and acquired immune effectors such as NK cells as well as B and T lymphocytes. Up to 50 antibodies are used in order to discriminate the different immune populations (CD3, CD4, CD8, CD19 and CD56) and to assess the

expression of activation and differentiation markers, e.g., CD16, CD27, CD28, CD38, CD45RA, CD62L, and CD69. In parallel, we evaluate the functional potential of NK cells by assessing CD107a-degranulation and intracellular IFN-γ production following co-culture with HLA class I deficient cell lines.

Thus, flow cytometry is the main technology we use to perform our study; this is why **Immunotools** antibodies would be very helpful to carry out our project.

This work should finally contribute to a better understanding of the different immune effectors involved during the course of HCMV infection and how HCMV contributes to the shaping of the immune system. These findings could be of particular interest in the context of allogeneic transplantation.

ImmunoTools *special* AWARD for **Raphaëlle Riou** includes 25 reagents

FITC - conjugated anti-human CD4, CD8, CD16, CD19, CD27, CD38, CD45RA, CD56, CD62L, CD69, CD86, HLA-ABC, Control Ig-G1,

PE - conjugated anti-human CD4, CD8, CD27, CD38, IFN-gamma, Control Ig-G1,

PerCP - conjugated anti-human CD3,

APC - conjugated anti-human CD3, CD16, CD27, CD38, CD56

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