# Immunological aspects of conventional and new treatments for cervical cancer, an immunopharmacological approach

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| ACT | Adoptive cell transfer |
| ATREG | Activated regulatory T-cell |
| APC | Antigen presenting cell |
| BT | Brachytherapy |
| CBA | Cytometric bead array |
| CGOA | Center for Gynecologic Oncology Amsterdam |
| CD | Cluster of differentiation |
| CHDR | Centre for Human Drug Research |
| CIN | Cervical intraepithelial neoplasia |
| CTL | $CD8^+$ Cytotoxic T lymphocyte |
| CTLA-4 | Cytotoxic T-lymphocyte Antigen 4 |
| DC | Dendritic cell |
| EBRT | External beam radiation therapy |
| EGFR | Epidermal growth factor receptor |
| FOXP3 | Forkhead box P3 |
| GMDSC | Granulocytic myeloid derived suppressor cell |
| HLA | Human Leukocyte Antigen |
| HPV | Human Papilloma Virus |
| HRHVP | High-risk human Papilloma Virus |
| ICS | Intracellular cytokine staining |
| IFN | Interferon |
| IL | Interleukin |
| LC | Langerhans cells |
| LST | Lymphocyte stimulation test |
| LUMC | Leiden University Medical Center |
| M1 | Macrophage type 1 |
| M2 | Macrophage type 2 |
| MOABS | Monoclonal antibodies |
| MMDSC | monocytic myeloid derived suppressor cell |
| MDSC | Myeloid derived suppressor cell |
| MRM | Memory Response Mix |
| MLR | Mixed Lymphocyte Reaction |
| NTREG | Naïve regulatory T-cell |
| NK | Natural Killer |
| PBMC | Peripheral blood mononuclear cells |
| PD-1 | Program death 1 |
| PD-2 | Program death 2 |
| PD-L | Program death ligand |
| PHA | Phytohemagglutinin |
| PRR | Pattern recognition receptor |
| SI | Stimulation index |
| SLP | Synthetic Long Peptide |
| TAM | Tumor associated macrophages |
| TGF | Tumor growth factor |
| TH CELL | $CD4^+$ T-helper |
| TIL | Tumor infiltrating T-cells |
| TIM | Tumor infiltrating myeloid cells |
| TIM-3 | T cell immunoglobulin mucin 3 |
| TLR | Toll-like receptor |
| TNF | Tumor necrosis factor |
| TREG | Regulatory T-cell |
| VEGF | Vascular endothelial growth factor |

## CURRICULUM VITAE

Hélène van Meir was born on the 20th of September 1981 in Goes. From the age of 10, she went to the girls-only boarding school Sint-Bavo humaniora in Ghent, Belgium, from which she graduated in 1999. In the same year she started with Pharmacy at the Catholic University of Leuven, Belgium, and switched to medical school at the Leiden University the year after. During her study, she worked as an allocation officer at the Eurotransplant International Foundation. She performed her graduation project at the department of Cardiac Surgery and Pediatric Cardiology at the Leiden University Medical Center, under supervision of Prof. dr. Hazekamp. She studied the use of bovine jugular vein graft for the reconstruction of the right ventricular outflow tract in a pediatric population at the Leiden University Medical Center and Centre Hospitalier Universitaire Vaudoise, Lausanne, Switzerland. In 2008 she obtained her medical degree (cum laude) and started working as a physician at the Department of Obstetrics and Gynecology at the Bronovo Hospital, The Hague. In 2009 she was appointed as a research physician in the Vascular Medicine research group at the Centre for Human Drug Research (CHDR). She focused on the integration of immunology in clinical pharmacology, and participated in several research projects, supervised by prof. dr. A.F. Cohen and prof. dr. J. Burggraaf. The studies in this thesis were performed in close collaboration with the departments of Clinical Oncology (prof. dr. S.H. van der Burg) and Gynecology (dr. M.I.E. van Poelgeest) of the Leiden University Medical Center and the Center for Gynecological Oncology Amsterdam (prof. dr. G.G. Kenter). Whilst working as a research physician at CHDR, she was trained as a clinical pharmacologist and obtained her degree in clinical pharmacology in 2016.

Since October 2012, Hélène performs her residency training in Obstetrics and Gynecology at the HMC Bronovo Hospital, The Hague and the Leiden University Medical Center, under supervision of dr. C.A.G. Holleboom and Prof. dr. J.J.M. van Lith.

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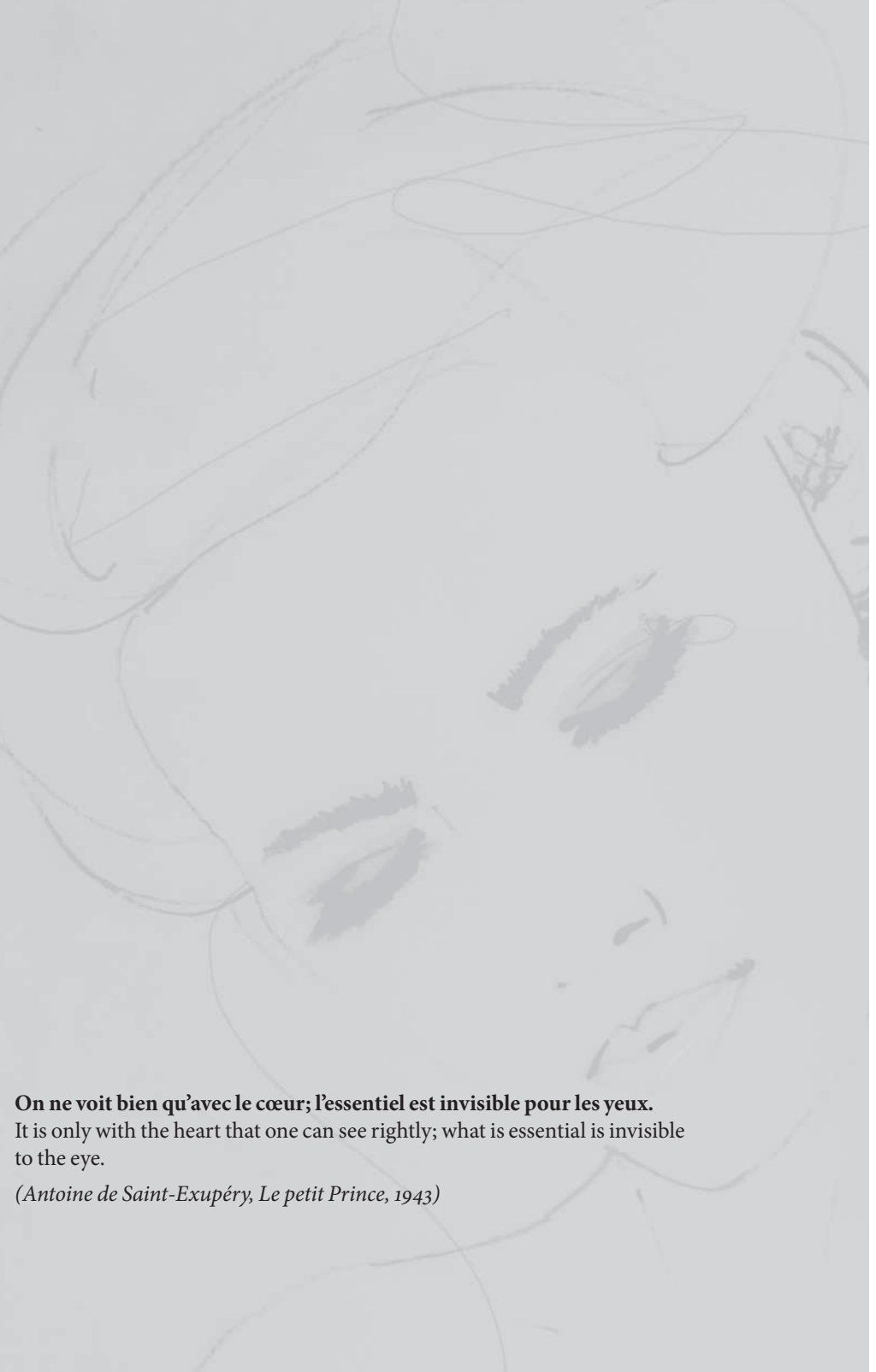

**On ne voit bien qu'avec le cœur; l'essentiel est invisible pour les yeux.**
It is only with the heart that one can see rightly; what is essential is invisible to the eye.

*(Antoine de Saint-Exupéry, Le petit Prince, 1943)*