Board of examiners

Dr. Guy Berbers
Center for Infectious Disease Control, National Institute of Public Health and the Environment
RIVM, Bilthoven, The Netherlands

Prof. Dr. Françoise Mascart
Clinique d'Immunobiologie - Hôpital Erasme- Laboratory of Vaccinology and Mucosal immunology
Université Libre de Bruxelles

Prof. Dr. Frans Gordts
Department Ear Nose and Throat, Universitair Ziekenhuis Brussel
Vrije Universiteit Brussel

Prof. Dr. Leonardo Gucciardo
Department Obstetrics and Prenatal Medicine
Universitair Ziekenhuis Brussel

Prof. Dr. Ingrid Wybo, Chair
Department Microbiology and Infection Control, Universitair Ziekenhuis Brussel
Vrije Universiteit Brussel

Prof. Dr. Denis Piérard, Promotor
Department Microbiology and Infection Control, Universitair Ziekenhuis Brussel
Vrije Universiteit Brussel

Dr. Kris Huygen , Co-promotor
Service Immunology- Communicable and Infectious Diseases
Scientific Institute of Public Health

VRIJE UNIVERSITEIT BRUSSEL

PhD in Medical Sciences
2017-2018

INVITATION to the Public defence of

Raissa Nadège CABORÉ

To obtain the academic degree of **'DOCTOR IN MEDICAL SCIENCES'**

Vaccine-preventable bacterial diseases in Belgium: monitoring of general population immunity and pregnancy vaccination strategies.

Tuesday 3 October 2017
Auditorium **Piet Brouwer**, 17:00
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:
http://www.vub.ac.be/english/infoabout/campuses

Summary of the dissertation

Diphtheria, tetanus and pertussis are three serious infectious diseases caused by bacteria and that can be prevented by vaccination. Diphtheria and tetanus are now under control although sporadic cases still occur in highly vaccinated populations, whereas pertussis is re-emerging in some developed countries despite the high vaccination coverage.

In this thesis, we have monitored the population immunity level in Belgium in different age groups and studied the immune responses in the context of pregnancy vaccination strategies against diphtheria, tetanus and pertussis.

A pentaplex immunoassay was developed for simultaneous detection of IgG antibodies induced by five vaccine antigens i.e. DT, TT, PT, FHA and Prn. We identified an underprotective antibody level against diphtheria and tetanus and confirmed the circulation of B. pertussis among the Belgian adult population.

Tdap vaccination during pregnancy induced sustained humoral and transient cellular response in women to the same extent in pregnant and non-pregnant women. High maternal antibodies were efficiently transferred through the placenta closing the susceptibility gap in infants prior to their first DTaP vaccination. All infants showed good antibody responses to the vaccine albeit minor inhibition by residual maternal antibodies was observed for infant antibodies to PT in terms of quantity and quality. Our results indicated that efforts should be made to improve the vaccination status of the adult population, particularly for diphtheria. They also support the recommendation of pregnancy vaccination strategies. The clinical significance of maternal antibodies interference on infant immune response should be further investigated.

Curriculum Vitae

Raissa Nadège Caboré was born on November 24th, 1982 in Ouagadougou, Burkina Faso. In 2005, she obtained a Licence in Biomedical Analysis from the Faculty of Medicine of the "Université de Ouagadougou". During her studies, she performed an internship at the Research Unit of Centre Muraz, Bobo-Dioulasso, Burkina Faso where she was initiated in medical research. After she graduated, she first worked at the Biomedical department of the "Institut de Recherche en Sciences de la Santé (IRSS-Ouagadougou) and then at the Clinical Research Unit of Nanoro (CRUN-URCN) as lab technician. In 2008, she moved to Belgium where she obtained her Master degree in Biomedical Sciences in 2013 from the Faculty of Medicine (ERASME campus) of the "Université Libre de Bruxelles (ULB)" by performing her dissertation on «the development and evaluation of a flow cytometric assay of specific cell-mediated immune response in activated whole blood (FASCIA) in response to HBHA antigen for the diagnosis of latent tuberculosis» at the Laboratory of Vaccinology and Mucosal Immunology (LoVMI). In November 2013, she started working as an "Ylieff" scientist supported by the Belgian Federal Science Policy Office (BELSPO) at the Service immunology of the Scientific Institute of Public Health (WIV-ISP Brussels). Besides working in collaboration with Antwerp University on the topic of maternal vaccination, she developed a multiplex assay for the surveillance and diagnostics of infectious diseases (Multisurv) project under the supervision of Dr. Denis Piérard and Dr. Kris Huygen.