



**PhD Research Program
Novartis Vaccines Academy,
Siena, Italy
Academic year 2010-2011**

Introduction

Novartis Vaccines and Diagnostics and Novartis Vaccines Institute for Global Health support a number of fellowships in several PhD programs that are accessible from many prestigious Italian Universities. Successful students will be admitted to a PhD program by the participating Universities and can choose a Novartis fellowship to carry out scientific research in a specific topic of bacterial or viral pathogenesis at molecular, biotechnological, immunological, cellular and bioinformatics levels (see below, Research Projects).

All recruited PhD students will be members of the PhD program in Novartis, and will carry out research activities within the assigned research group on a defined research project under the supervision of a research staff scientist, who will act as a supervisor, and will participate in all planned activities. The enrolled PhD students will be required to attend all courses and activities organized by the Novartis Vaccines Academy as well as seminars from international academia. Attendance to at least one National/International workshop / congress / meeting is foreseen per year. Furthermore, she/he will be required to present monthly, in English, in oral presentation and poster presentation format, results of the experiments during lab meetings, and annually in progress reports for their universities and also at internal and external meetings and congresses. During the development of the PhD project the student will be required to become competent with all of the technologies required for the pursuit of their research aim. Commitment of the PhD student to research activity should be at a level to ensure at least one first-author publication before the end of the PhD program in a peer-reviewed journal.

Recruitment process

Excellent and highly motivated candidates will be pre-selected on the basis of the CV and two letters of reference. A total of 18 candidates will be selected. Each applicant will be asked to prioritize three preferred projects out of 27 (see list). Fifteen (15) fellowships with possibility to address projects 1-24 will be allocated to research projects carried out in the Novartis Vaccines Research Center and two (2) fellowships will be allocated to the Novartis Vaccines Institute for Global Health to address projects 25-27.

Depending on Universities organization, PhD programs are usually held during the period October 2010 - January 2011.

Further information on application procedures and summary of research projects, can be obtained by contacting the PhD program office (PhDOffice.NVDIT@novartis.com).

Deadline June 15, 2010

See also:

<http://www.novartisvaccines.it/lavorare-in-novartis/index.shtml>

<http://www.nvgh.novartis.com>

Project n.**Research Projects**

- 1 **Structural and functional characterization of proteins from pathogenic bacteria: structure-based optimization of antigens for the development of improved vaccines against infectious diseases**
- 2 **Unraveling the functional and immunological features of Neisserial Heparin Binding Antigen (NHBA)**
- 3 **Regulation of expression of NHBA, an important virulence factor and vaccine antigen of Meningococcus.**
- 4 **Molecular characterization of bacterial antigens: investigation of the molecular elements relevant to bacterial pathogenicity and to the interaction with the immune system**
- 5 **Identification of novel virulence factors involved in meningococcal pathogenesis and characterization of the molecular mechanisms induced during host-pathogen interaction**
- 6 **Dissecting the molecular mechanism of pilus assembly in Group B *Streptococcus* through a multidisciplinary approach.**
- 7 **Sensing and responding: streptococcal two-component signal transduction systems**
- 8 **Horizontal gene transfer by conjugation in Gram-positive bacteria**
- 9 **Characterization of single or multi-species bacterial communities in tonsils of patients subjected to tonsillectomy.**
- 10 **Implementation and application of mutagenesis tools for studying gene function in Gram-positive bacterial pathogens.**
- 11 **Investigation of the molecular basis for the biphasic expression of the *pneumococcus* pilus, an adhesin essential for virulence and an important vaccine antigen.**
- 12 **Identification and characterization of surface-exposed virulence factors from non-typable *Haemophilus influenzae* as potential vaccine candidates**
- 13 **Exploring the bacterial biofilm matrix composition to identify virulence factors and promising vaccines candidates**
- 14 **Characterization of the Esx secretion system of *Staphylococcus aureus***
- 15 **New combined approaches to the biological and biochemical characterization of bacterial proteins of unknown function and of their interacting molecular partners.**
- 16 **Unveiling the molecular events of NAD-mediated induction of autophagy**
- 17 **Investigating microbial interactions and *Streptococcus pneumoniae* antigen vaccine candidates function by In Vivo Imaging System (IVIS) Analysis**
- 18 **Next generation vaccines applying adjuvants and novel vaccine delivery technologies**
- 19 **TLR agonists as adjuvants: Two are better than one? Why?**
- 20 **Functional characterization of HCMV selected antigens**
- 21 **Analysis of interactions between human cytomegalovirus and the host immune system**
- 22 **Bacterial Phenotyping in Vaccinology**
- 23 **Discovery of new potential vaccine candidates through the study of new algorithms for genome annotation**
- 24 **New programming approaches in the bioinformatics field**
- 25 **The impact of Salmonella polysaccharide antigen structure on conjugate vaccines**
- 26 **Why are HIV-infected Africans highly susceptible to infection with nontyphoidal *Salmonella*, but not *Salmonella* Typhi?**
- 27 **Identification and characterization of Toll Like Receptor 2 activating components in outer membrane blebs of *Shigella sonnei***