# Immunology

**18-22nd of November**

This one-week course will help you to understand the basics of human immunology. You will learn what our immune system is: an intricate, highly integrated system that plays a key role in organismal homeostasis, by combating pathogens and maintaining the body integrity. The emphasis will be made on conceptual understanding of the immune system and its functioning rather than catalogue knowledge.

**Aims of the course:**

* To introduce the participants to the basics of human immunology
* To define the main problems and research direction in the current field of human immunology
* To introduce the participants to the research that is performed on immunology at GIGA

**Topics covered** include the composition of immune system, the contribution of the immune system to organismal homeostasis. You will learn how is the immune response coordinated and how a deregulated immune system is driving disease.

**By the end of this course the participants should be able to:**

* Describe the main cell types of immune system, their function and development steps
* Describe the main type of immune responses and name the main cells involved
* Compare innate, trained and adaptive immunity
* Explain the current immunological theories
* Describe different vaccinations and how they work and argue about the development of new vaccines for different disorders
* Describe the anti and pro cancer activities of the immune system and discuss the existing anticancer therapies
* Explain transplantation and discuss the problems that may occur at transplantation
* Describe autoimmune disorders
* Discuss allergic reaction of the organism
* Describe the connection of immune system with general metabolism

**Target group:**PhD candidates in the 1st and 2nd year of their PhD. The group is limited to 20 participants.

**Prerequisites:** This workshop has no prerequisites other than working knowledge of English.

**Location:**GIGA B34 +5

**Educators:**

Christophe Desmet (course coordinator), Nathalie Jacobs, Vincent Geenen, Sylvie Legrand, Thomas Marichal, Frederic Baron, Fabrice Bureau, Emmanuel Dejardin - GIGA-I3; and Souad Rahmouni, GIGA-Genetics (ULiège)

**The course schedule:**

**Day 1. The actors: Organs and cells of the immune system**

**9:00 – 9:30**Course introduction. Goals, strategy and policies of the course

**9:30 -  10:30**    Developmental origin of immune cells (C. Desmet)

**10:45- 11:45**    Innate immune cells (C. Desmet)

**11:45- 13:00**Lunch break

**13:00- 14:00**Lymphoid cells (V. Geenen, N. Jacobs)

**14:15-15:15**Lymphoid cells- continuation (V. Geenen, N. Jacobs)

**15:30- 16:00**Q&A

**16:00 -18:00** Self study

**Day 2. The play: Is something wrong and what should be done about it?**

**9:00 – 9:30**Previous day summary presented by the participants

**9:30 - 10:15** How does the immune system detects threats to organismal homeostasis? Part 1 (S. Legrand)

**10:45 -11:30**    How does the immune system detects threats to organismal homeostasis? Part 2.  (S. Legrand)

**11:30 - 13:00**Lunch break

**13:00- 14:00**“Colors” of immune responses (T. Marichal)

**14:15-15:15**Different types of immune responses (T. Marichal)

**15:30- 16:00**Q&A

**16:00 -18:00**Self study

**Day 3. Vaccination and Cancer Immunology**

**9:00 – 9:30**Previous day summary presented by the participants

**9:30-11:45**Vaccination. Theory and discussions with the participants (C. Desmet)

**11:45- 13:00**Lunch break

**13:00-15:15** Cancer Immunology. Theory and discussions with the course participants (N. Jacobs)

**15:30- 16:00**Q&A

**16:00 -18:00**Self study

**Day 4. Transplantation immunology and Autoimmune disorders**

**9:00 - 9:30**Previous day summary presented by the participants

**9:30 - 11:45**     Transplantation immunology. Theory and discussions with the participants (F. Baron)

**11:45 - 13:00**Lunch break

**13:00 - 15:15**   Autoimmune disorders. Theory and discussions with the participants (V. Geenen)

**15:30- 16:45**Immune clock. Theory and discussions with the course participants (E. Dejardin)

**16:00 - 17:00**Self study

**Day 5. Immunometabolism and Mucosal diseases**

**9:00 - 9:30**Previous day summary presented by the participants

**9:30 - 11:45**Immunometabolism. Theory and discussions with the participants (S. Legrand)

**11:45 - 13:00**Lunch break

**13:00 - 15:15**   Mucosal Immunology (F. Bureau)

**15:30- 16:45  Microbiota and inflammatory bowel diseases.** Theory and discussions with the participants (S. Rahmouni)

**16:45 - 17:15** Conclusion