



University of Nicosia, Cyprus

Course Code IMMU-547	Course Title Transplantation Immunology	ECTS Credits 7
Department Life and Health Sciences	Semester Spring/Summer	Prerequisites IMMU-541 Cellular and Molecular Immunology
Type of Course Elective	Field Biomedical Sciences	Language of Instruction English
Level of Course 2 st Cycle	Year of Study 1 st	Lecturer Dr. Demoliou Catherine
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

This course will provide a further understanding of the principles and issues in clinical transplantation. The aims of the course are to:

- Demonstrate the immune mechanisms underlying immune recognition of allograft
- Present the molecules and cells that are involved in the modulation of allograft rejection
- Emphasize the modern methods used for compatibility evaluations between donor, recipient and in sensitized patients
- Describe the strategies to prevent graft rejections
- Introduce other forms of transplantations (hematopoietic cell, xenogeneic) and the immunological issues associated with these.
- Review some of the advances in tolerance and xenotransplantation research.

Learning Outcomes:

After completion of the course students are expected to be able to:

- Explain the function of the various cell and molecules underlying allograft rejection
- Account for the cells and molecular pathways that participate in organ rejection
- Identify donor tissue antigens and host cellular responses in hematopoietic cell transplantations
- Explain the scientific basis of techniques for HLA typing, detection of HLA antibodies and for monitoring T-cell responses
- Describe the genomics and proteomic-based methods for compatibility testing

- Discuss the use of immunosuppressive drugs to prevent organ rejection and the animal models used in transplantation research
- Account for the pathway of antigen presentation and chronic rejection
- Present the basis of tolerance induction strategies (i.e. use of regulatory T cells, mesenchymal stroma cells and lymphodepletions).
- Comment on the ethical issues underline organ transplantation

Course Contents:

- Alloreactivity; Antibodies in Transplantation
- HLA and Non-HLA Antibody; typing by PCR and DNA sequencing
- Cell Mediated Rejection;
- Transplantation Tolerance
- Transplantation of the Sensitized Patient:
- Histocompatibility Testing
- Chimerism Testing by Quantitative PCR; Gene-specific PCR Typing of Killer Cell Immunoglobulin-like Receptors (KIR)
- Complement-dependent Cytotoxicity Crossmatch;
- Tolerogenic Dendritic Cells and Induction of T Suppresson Cells in Transplant Recipients
- Stem cell biology and transplantation for hematologic malignancies
- Allogeneic stem cell transplantation
- Complications of transplantation (immune reconstitution/infections)
- Graft vs. host disease
- Immune modulation

Learning Activities and Teaching Methods:

Lectures; presentations and discussions of biotechnology/nonotechnology examples from scientific literature. Cooperative learning. Demonstration: Familiarization with data/graphs of experimental output; video presentations of technological applications and analytical instruments used.

Assessment Methods:

Assignments/Exercises; Oral presentations and written reports; Mid-term and Final Exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Fritz H. Bach, Hugh Auchincloss	Transplantation Immunology	Wiley-Liss	(1995)	ISBN-10: 0471304484 ISBN-13: 978- 0471304487
Zachary, Andrea A., Leffell, Mary S.	Transplantation Immunology Series: Methods and Protocols	Humana Press;	2nd ed. 2013	ISBN-10: 1627034927 ISBN-13: 978- 1627034920

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Laurence A. Turka, Kathryn J. Wood	Transplantation (Cold Spring Harbor Perspectives in Medicine)	Cold Spring Harbor Laboratory Press	1 ed. (2013)	ISBN-10: 1936113880 ISBN-13: 978- 1936113880
Bjarte G Solheim	HLA System in Clinical Transplantation: Basic Concepts and Importance	Wiley- Blackwell	1 ed. (2009)	ISBN-10: 3527320849 ISBN-13: 978- 3527320844
Robert J. Soiffer	Hematopoietic Stem Cell Transplantation	Humana Press;	2nd ed. 2008	ISBN-10: 1934115053 ISBN-13: 978- 1934115053
Bruce Kaplan, Gilbert J. Burkhart, Fadi G. Lakkis	Immunotherapy in Transplantation: Principles and Practice	Wiley- Blackwell;	(2012)	ISBN-10: 1405182717 ISBN-13: 978- 1405182713
Robert M. Veatch	Transplantation Ethics [Paperback]	Georgetown University Press;	Reprint edition (2002)	ISBN-10: 0878408126 ISBN-13: 978- 0878408122

