School on Organ Transplantation. Unravelling the Complexity of Decision-Making in Transplantation: Innovation on Medicine and Science

Lake Como School of Advanced Studies - June 21-23, 2023

Home

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School on Organ Transplantation, June 21-23, 2023
Unravelling the Complexity of Decision-Making in Transplantation:
Innovation on Medicine and Science

Directors:

Paolo Antonio Grossi, Università degli Studi dell'Insubria, Varese, Italy
Jay Alan Fishman, Harvard Medical School and Massachusetts General Hospital, Boston, USA

Summary:

Organ transplantation has saved innumerable lives. These miraculous advances reflect a complex interplay between the immunology and physiology of transplanted organs, improvements in organ preservation, and the administration and ethics of the allocation of the limited supply of organs. Expert faculty will provide insight into this exciting field using both didactic and interactive, case-based sessions. Opportunities for informal interactions with faculty and participants will supplement formal sessions.

Topics:

- Exploring the unique features of transplantation for each organ type
- Examine allocation systems for organs from deceased donors
- Consider the unique biological and ethical challenges of xenotransplantation
- Introduce new technologies for organ preservation and life support
- Advances in biology impacting transplantation (immunology, microbiome)
- Cultural sensitivity, ethics, and education in transplantation

Introduction:

The clinical team that carried out that first identical-twin transplantation in 1954 in Boston could not have anticipated the tremendous advances that have occurred in transplantation. Today's organ recipients are the beneficiaries of improved immunosuppression with one-year graft-survival rates commonly at 80 to 90 percent. The challenges and opportunities of transplantation mirror those of those of our society: ethical decisions regarding allocation of resources, the COVID-19 pandemic, use of organs from donors carrying viral infections (HIV, hepatitis C), experimental therapies to reduce chronic allograft failure; human studies of new therapies including xenotransplantation (pig-to-human transplants). We also with complications associated with immunosuppressive drugs, Including nephrotoxicity, hypertension, hyperlipidemia, and diabetes, and the increased incidence of infection and cancer. The responsibility for stewardship of organs is emphasized by the growing gap between the number of organs available and the demand for organs; national decisions are made regarding the ethical dilemmas of equity versus utility in the allocation of this increasingly valuable resource. These factors comprise routine decisions that guide organ allocation and the care of critically ill, complex patients. How are such decisions made?
Clinical transplantation is one of the medical miracles of the 20th century and remains an enormously exciting field. The major achievements and disputes in this multidisciplinary clinical field will be the subject of this school within the central theme of complexity.

Chaos vs. Complexity?

Biological systems are complex. In transplantation, as organs are exchanged between donors and recipients, the quality of organs, national allocation systems and availability of medical care vary greatly. These differences, even those which are small, **produce widely divergent outcomes, rendering long-term prediction or generalization impossible. Thus, decision-making in transplantation must account for numerous, individual biological factors – for which formal measurements may not exist.** New tools are under development to "measure" graft function and risk for infection or cancer. Assessment still relies on physicians standing at the bedside saying whether or not the patient "looks sick." Pathologists opine "This is a good organ." These "expert" opinions are used to predict the outcomes of transplantation. **Complexity** is used to characterize a process with many parts where those parts interact with each other in multiple ways. The study of these complex linkages at various scales is the main goal of complex systems theory – and the exciting subject of this course.
What is the path forward for clinical transplantation? Can the outcomes of transplantation be improved based on the initial conditions of donor, organs, and recipients? Or are outcomes dependent on unknown or unpredictable features, and completely unpredictable? Can we improve how such decisions are made? Can new, life-sustaining technologies be deployed so as to improve clinical outcomes?
This course is dedicated to the identification of the variables in transplantation as well as the dramatic advances in immunosuppression, assessment of immune function, and future technologies that will affect clinical outcomes and drive research. It will target the leaders of tomorrow – the physicians, surgeons and scientists engaged in advancing the frontiers of transplant care

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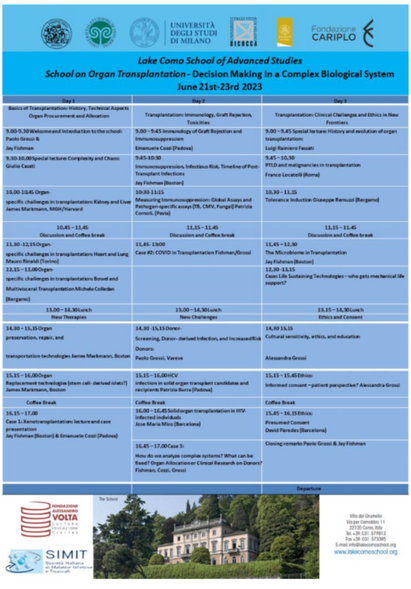
Program



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School on Organ Transplantation - Decision Making in a Complex Biological System
June 21st-23rd 2023

Day 1	Day 2	Day 3
Basics of Transplantation: History, Technical Aspects Organ Procurement and Allocation	Transplantation: Immunology, Graft Rejection, Toxicities	Transplantation: Clinical Challenges and Ethics in New Frontiers
9.00-9.30 Welcome and Introduction to the school: Paolo Grossi & Jay Fishman	9.00 - 9.45 Immunology of Graft Rejection and Immunosupression Emanuele Cozzi [Padova]	9.00 - 9.45 Special lecture: History and evolution of organ transplantation: Luigi Rainiero Fassati
9.30-10.00 Special lecture: Complexity and Chaos: Giulio Casati	9.45-10.30 Immunosuppression, Infectious Risk, Timeline of Post-Transplant Infections Jay Fishman [Boston]	9.45 - 10.30 PTLD and malignancies in transplantation Franco Locatelli [Roma]
10.00-10.45 Organ specific challenges in transplantation: Kidney and Liver James Markmann, MGH/Harvard	10.30-11.15 Measuring Immunosuppression: Global Assays and Pathogen-specific assays [TB, CMV, Fungal] Patrizia Comoli, [Pavia]	10.30 - 11.15 Tolerance Induction Giuseppe Remuzzi [Bergamo]
10.45 - 11.45 Discussion and Coffee break	11.15 - 11.45 Discussion and Coffee break	11.15 - 11.45 Discussion and Coffee break
11.30 -12.15 Organ-specific challenges in transplantation: Heart and Lung Mauro Rinaldi [Torino]	11.45 - 13.00 Case #2: COVID in Transplantation Fishman/Grossi	11.45 - 12.30 The Microbiome in Transplantation Jay Fishman [Boston]
12.15 - 13.00 Organ-specific challenges in transplantation: Bowel and Multivisceral Transplantation Michele Colledan [Bergamo]		12.30- 13.15 Case: Life Sustaining Technologies - who gets mechanical life support?
13.00 - 14.30 Lunch New Therapies	13.00 - 14.30 Lunch New Challenges	13.15 - 14.30 Lunch Ethics and Consent
14.30 - 15.15 Organ preservation, repair, and transportation technologies James Markmann, Boston	14.30 -15.15 Donor-Screening, Donor- derived Infection, and Increased Risk Donors: Paolo Grossi, Varese	14.30 15.15 Cultural sensitivity, ethics, and education: Alessandra Grossi
15.15 - 16.00 Organ Replacement technologies [stem cell- derived islets?] James Markmann, Boston	15.15 - 16.00 HCV infection in solid organ transplant candidates and recipients Patrizia Burra [Padova]	15.15 - 15.45 Ethics: Informed consent – patient perspective? Alessandra Grossi
Coffee Break	Coffee Break	Coffee Break
16.15 - 17.00 Case 1: Xenotransplantation: lecture and case presentation Jay Fishman [Boston] & Emanuele Cozzi [Padova]	16.00 - 16.45 Solid organ transplantation in HIV-infected individuals Jose Maria Miro [Barcelona]	15.45 - 16.15 Ethics: Presumed Consent David Paredes [Barcelona]
	16.45 - 17.00 Case 3: How do we analyze complex systems? What can be fixed? Organ Allocation or Clinical Research on Donors? Fishman, Cozzi, Grossi	Closing remarks Paolo Grossi & Jay Fishman
		Departure

Link Program (PDF)

Lake Como School of Advanced Studies - School on Organ Transplantation June, 2023

Decision Making in a Complex Biological System: Schedule

Arrival	Day 1 **Basics of Transplantation: History, Technical Aspects Organ Procurement and Allocation**	Day 2 **Transplantation: Immunology, Graft Rejection, Toxicities**	Day 3 **Transplantation: Clinical Challenges and Ethics in New Frontiers**
	9.00-9.30 Welcome and Introduction to the school: Paolo Grossi & Jay Fishman	9,00 – 9:45 Case 1: Xenotransplantation: lecture and case presentation Jay Fishman (Boston) (Padova)	9,00 – 9,45 Special lecture: History and evolution of liver transplantation: Luigi Rainiero Fassati
	9,30-10,00 Special lecture: Complexity and Chaos: Giulio Casati	9:45-10:30 Immunosuppression, Infectious Risk, Timeline of Post-Transplant Infections Jay Fishman (Boston)	9,45 – 10,30 PTLD and malignancies in transplantation Andrea Ambrosini (Varese)
	10,00-10,45 Organ-specific challenges in transplantation: Kidney and Liver James Markmann, MGH/Harvard	10:30-11:15 Measuring Immunosuppression: Global Assays and Pathogen-specific assays (TB, CMV, Fungal) Patrizia Comoli, (Pavia)	10,30 – 11,15 Tolerance Induction Giuseppe Remuzzi (Bergamo)
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	12,15 – 13,00 Organ-specific challenges in transplantation: Bowel and Multivisceral Transplantation Michele Colledan (Bergamo)	**12,30-13,00 Case # 2 Unusual case of Donor Derived Infection Maddalena Peghin (Varese)**	12,30 -13,15 Case: Life Sustaining Technologies – who gets mechanical life support?
	13,00 – 14,30 Lunch Newr Therapies	**13,00 – 14,30 Lunch New Challenges**	**13,15 – 14,30 Lunch Ethics and Consent**

	14,30 – 15,15 **Immunology of Graft Rejection and Immunosuppression Emanuele Cozzi (Padova)**	14,30 -15,15 Donor-Screening, Donor-derived Infection, and Increased Risk Donors: Paolo Grossi, Varese	14,30 15,15 Cultural sensitivity, ethics, and education Alessandra Grossi
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		16,45 – 17,00 Case 3: How do we analyze complex systems? What can be fixed? Organ Allocation or Clinical Research on Donors? Fishman, Cozzi, Grossi	**Closing remarks Paolo Grossi & Jay Fishman**
			Departure

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Contacts

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