

## Denise Ferrera awarded her PhD



Title: "Subcellular microdomains in T cell development"

Denise has been accepted a 4 year position as Staff Scientist at the Italian Institute of Technology, Genoa. The work of her thesis will be published in Eur. J. Immunol.: Ferrera D., Panigada M., Porcellini S. and Grassi F.

Recombinase-deficient T cell development by selective accumulation of CD3 into lipid rafts, European Journal of Immunology, in press.

Hemopoietic progenitors, coming from bone marrow through the blood stream, colonize the thymus where they are induced to differentiate to T lymphocyte. To succeed in becoming a functional mature T lymphocyte, T cell precursors (thymocytes) must undertake a number of differentiation steps and pass through stage specific checkpoints, which ensure maturation only of appropriate cells. Denise's project was aimed at characterizing the microdomain in the thymocyte responsible for communicating to the cell interior and the nucleus that the maturing T cell has the requirement to pass through the first quality control checkpoint in T cell development, namely b selection. This checkpoint ensures that only thymocytes with productive somatic rearrangement of the gene encoding the b chain of the T cell receptor (TCR) progress in the differentiation process. The TCR confers clonal specificity to each T cell and represents the molecular basis for specific immunity toward pathogens, like virus, bacteria, etc. Denise studied how the pre-TCR, which is composed of the rearranged b chain associated with the pre-T a chain, transduces the differentiation signal to the cell interior. A peculiarity of the pre-TCR is to be active spontaneously once it reaches the plasma membrane and this property, according to Denise's study, is facilitated by segregation in particular microdomains of the cell plasma membrane. These domains, which are enriched in glycosphingolipids and have peculiar biophysical properties, are defined as plasma membrane lipid rafts.

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### New Members of the Fabio Grassi Lab

Michela Frascoli joined the lab as PhD student

Stefano Volpi, M.D. joined the lab as visiting scientist from the Department of Pediatrics, University of Genoa. He is performing experiments in the lab from October 2007 to March 2008.

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## Reports Published



The IRB has published its annual report for 2006. The 60 page document is intended not only as a report on the scientific progress of the institute and the financial condition of the Foundation, but also as a way involving donors and interested parties in the mission and vision of the institute. The theme of the report is motion. An exploded world map in the back of the report shows the actual movement of IRB researchers giving lectures and seminars as well as visiting scientists to Bellinzona. The effect is one of putting Bellinzona and the IRB on the map as a "hub" of world class biomedical research.



The Scientific Report covers the period from 2005 to 2006 and describes in detail the scientific and didactic production of the IRB during that time.

For more information or if you would like a copy of these reports please contact:

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