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Newsletter

Markus Manz, "Hematopoiesis" Group Leader

NEWS

Moving In.

In July of last year the IRB announced the beginning of an ambitious project of converting an existing building nearby into a state of the art research facility. The inauguration of the building was held on the 15th of May, and the process of moving in has begun. More machine than building, the sophisticated lab space will allow much needed room to grow for IRB researchers.

Inauguration of the IRBis (from Left): On. Filippo Gianoni, Prof. Antonio Lanzavecchia, Prof. Giorgio Noseda, On. Gianluigi Della Santa, On. Bixio Caprara

The project of transforming the former hardware store into a research facility in less than a year was a challenging task. Representing the interests of the IRB and coordinating the technical specifications was Group Leader Fabio Grassi. Thanks to his extraordinary efforts in close collaboration with Enrica (Chicca) Mira Catò and Luana Perlini, the building is now a sophisticated piece of machinery.

The coming months will be dedicated to breaking-in the infrastructure and gradually moving in the scientists. Running the two buildings will not be easy. The added workload for Mauro (Mimo) Pasteris will be offset by Ronnie Baccalà, who recently joined the IRB.

Honorable Gabriele Gendotti, Minister for Education Culture and Sport, was on hand, together with the Bellinzona Municipal Governement and foundation representatives for a tour, led by Fabio Grassi, of the facilities.

Prof. Giorgio Noseda, in his official remarks at the ceremony opening the building, noted that the IRBis can be seen as a wave that is carrying the institute to the next stage in its development. The short wave was the startup in palazzo Fabrizia, which provided the IRB with the right environment and structure to grow from 0 to 75 collaborators. The medium wave is the addition of the IRBis in via Murate, which beyond providing more laboratory space, allows the IRB to perform sophisticated experiments that would otherwise be impossible. From a logistics point of view the two building solution will be a challenge and clearly the ideal solution would be to have a single building or cluster of buildings to house the IRB and other institutes. This vision of the future of the IRB was defined by the President as the "long Wave".

Discussions with the city of Bellinzona about a future site for a single building, large enough to allow for future growth, have begun in earnest. The Municipal government is preparing a message to the city council that will outline the medium to long term strategy in support of the IRB for the Fall.

The annual IRB student retreat was held at the Santa Maria Convent in Bigorio from May 17 to 19.

Sebastian Amigorena gave a guest lecture to open the event on Thursday evening. On Friday students gave their talks and led discussions on abstracts and posters, and had the possibility of interacting with guest lecturers individually. In the evening a lecture was given by historian Dr. Giuseppe Chiesi of the Office of Culture, Bellinzona. The following day student discussions were followed by guest lecturer Peter Gierschik (Ulm). To conclude the event a hike in the mountains around Bigorio provided a chance to clear the mind and take in the beautiful natural surroundings.

Students: Debora Pinna, Dirk Baumjohann, Mirek Hons, Denise Ferrera, Ulrike Naumann, Thomas Pertel, Omar Vanoni, Rebekka Geiger, Anna Casati, Michael Schmid, Andrea Riboldi, Sekhar Boddupalli, Nadia Rahm, Christina Helbig, Martha Neagu, Chiara Borsotti, Dior Kingston, Sivia Volpe, Daniel Venetz, Tito Calì, Milena Schiraldi, Riccardo Bernasconi, Tiziana Apuzzo, Katrin Kuscher.

Santa Maria Convent in Bigorio

Musica e Molecole, 3rd event.

The third Musica e Molecole event was held on the evening of the 15th of May. Antonio Lanzavecchia provided a stimulating look at the history of immunology punctuated by stories of individual scientists and their discoveries. The musical portion of the evening was dedicated to Ennio Morricone played by the chamber orchestra Camerata dei Laghi. In addition to the string instruments, two actors and a soprano added a theatrical dimension to both the well known soundtrack repertoire of Morricone as well as his lesser-known works.

The Hall of the Institute

The three Musica e Molecole events that have been held since last Fall have explored very different types of music; Jazz with a trio of piano, clarinet and bass, Contemporary Music with the electronic percussion of Stockausen, and Modern with the music of Ennio Morricone.

The Future of Musica e Molecole events will be built on the results of these first three experimental evenings that have been generously funded by UBS Bellinzona, BSI, and BancaStato, respectively. A closer integration with the events of the foundation science et cité in Lugano may open new possibilities to expand the

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accessibility of the events beyond the IRB and beyond Bellinzona.

Apprentices Visit IRB.

On the 15th of April the IRB was host to a group of apprentices in their third year of training. Led by their science teacher, Mr. Miro Samà, the students got an introduction to the institute and an interesting talk by Dr. Fabio Grassi.

The Patrizi of Bellinzona Visit the IRB.

On the 1st of May the association of the 5 Patriziati of the Bellinzona Region held their annual family gathering, including a visit to the IRB. Tom Brooks and Antonio Lanzavecchia offered an inside look at the running of the institute from scientific and administrative point of view. The group then toured the facilities.

The Patrizzi organize events every year in favour of the region including the Beatles Days concerts.

More info: http://www.patriziato.ch/

Interleukin-17 Producing T cells Characterized.

Federica Sallusto and Giorgio Napolitani Surface phenotype and antigenic specificity of human interleukin 17–producing T helper memory cells Nature Immunology May 2007. Yeast infection can stimulate the development of a unique type of human immune cell, according a study to be published in the June issue of Nature Immunology. Complementing earlier work published on mouse T lymphocytes in Nature Immunology (DOI:10.1038/ni1460, 22 April 2007), Federica Sallusto, Giorgio Napolitani and colleagues studied immune responses of human T lymphocytes to the yeast Candida albicans — a ubiquitous pathogen that can cause life - threatening infections in immuno compromised individuals. The team reports that Candida albicans stimulates the development of T lymphocytes specialized in producing interleukin 17, an immunomodulatory protein associated with both harmful autoimmunity and helpful immune responses to certain bacteria.

Notably, this new study provides the first characterization of human interleukin 17-producing T lymphocytes. The study broadens our understanding of the ways that T lymphocytes in humans can respond to pathogens, providing a key piece of the puzzle about T lymphocytes specialized in producing interleukin 17, which likely play important roles in many immune responses.

Federica Sallusto and Giorgio Napolitani

A model for OMENN Syndrome.

The Journal of Clinical Investigation dedicated its May cover story to a collaborative project between the IRB group of Fabio Grassi and researchers in Italy. The study validates a murine model for the devastating Omenn Syndrome, an autoimune deficiency in newborn children. In the 40 years since Harvard medical student Gilbert Omenn first described the rare, inherited disorder producing a paradoxical combination of immunodeficiency and immune dysregulation, the pathogenesis of Omenn syndrome (OS) has remained mysterious. Rag enzymes are the main players in V(D)J recombination, the process responsible for rearrangement of TCR and Ig genes Hypomorphic Rag mutations in humans, which maintain partial V(D)J activity, cause a peculiar SCID associated with autoimmune-like manifestations, Omenn syndrome (OS).

Although a deficient ability to sustain thymopoiesis and to produce a diverse T and B cell repertoire explains the increased susceptibility to severe infections, the molecular and cellular mechanisms underlying the spectrum of clinical and immunological features of OS remain poorly defined. In order to better define the molecular and cellular pathophysiology of OS, we generated a knockin murine model carrying the Rag2 R229Q mutation previously described in several patients with OS and leaky forms of SCID.

Fabio Grassi

These Rag2 (R229Q/R229Q) mice showed oligoclonal T cells, absence of circulating B cells, and peripheral eosinophilia. In addition, activated T cells infiltrated gut and skin, causing diarrhea, alopecia, and, in some cases, severe erythrodermia. These findings were associated with reduced thymic expression of Aire and markedly reduced numbers of naturally occurring Tregs and NKT lymphocytes. In conclusion, Rag2(R229Q/R229Q) mice mimicked most symptoms of human OS; our findings support the notion that impaired immune tolerance and defective immune regulation are involved in the pathophysiology of OS.

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