

## Immunology Department

The actual Immunology Department was created in 1969, when, at the initiative of Prof. Dr. Ioan Moraru, the manager of the Institute, has established the Immunology Laboratory, natural result of the necessity of rallying of research to the development of immunology as a individualized science. The activity of this new laboratory was originally intended theoretical and fundamental immunology research, focused on experimental studies concerning the immunity of the vertebrates and the genetic control of immune response.



Prof. Dr.  
Ioan Moraru

Immunology Laboratory was consolidated in 1973 by including a unit of immunodiagnostic, already existing in the institute in 1969. Thus, we have created two collective: **Immunochemistry**, led by Dr. Chem. Victor Gheție and **Immunopathology**, led by Dr. Rodica Lenkei.

The scientific activity of the lab was diversified, realizing fundamental studies concerning the biosynthesis and catabolism of immunoglobulins and the relationship IgG - staphylococcal protein A, the latter under a contract with the University of Uppsala, Sweden. Immunochemistry researches were completed with the immunopathology, concerning the mechanisms of some diseases with immune component and characterization of anti-albumin antibodies. Even as, the immunopathology team developed an immunodiagnostic activity for medical units from the network, and this activity was maintained in this group so far.

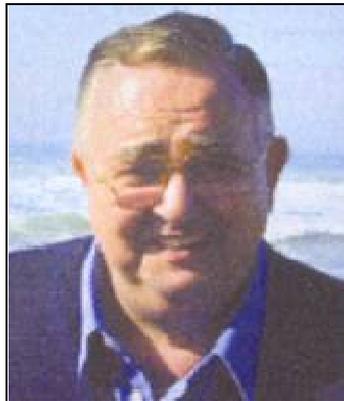
Since 1975, Immunology Laboratory is expanded through the establishment of **Cellular Immunology**, led by Dr. Andrew Sulica. To this group was attached **Nuclear Unit**, headed by Dr. Chem. Cornel Medeșan, unit who provided services to the entire institute. In this new formula, the research activity of the Immunology Laboratory turned to studies that aimed to characterize the lymphocyte populations from blood and lymphoid organs, as the characterization of receptors for immunoglobulin (Fc receptors) and cellular markers. Later, since 1980, staff of Cellular Immunology will focus on functional analysis of NK cells under a contract with the U.S. National Cancer Institute.

In 1979 is created in the laboratory the **Microproduction Unit**, headed by Dr. Chem. Cornel Medeșan. Served by members of all laboratory, this unit has materialized a number of existing preoccupations since 1972, which were produced in the laboratory reagents used in experimental models (immune serum, rosette reagents). Systemic activity of micro production has involved the realization in the institute of products for disposing of clinical laboratories in the country. Thus, were produced specific anti-immunoglobulin light chains serum, anti - total human protein serum, anti-IgD serum and immunoplates for dosing, anti-C1q specific serum and immunoplates for dosing, specific anti-fibronectin serum and immunoplates for dosing, medium for separation of human lymphocytes (Sepcel), kit for determination of anti-albumin

antibodies, radioimmunoassay kits for determination of hormones, kit for determination of immune complexes. Since 1984, Micro Unit managed to impose market immunodiagnostic materials as the COMASIM, mark held the patents for products developed in the institute. After termination of the unit activities in 1991, the only reagent which continued to produce so far - but only for domestic needs - was the separation medium Sepcel.

In 1984 he was created a new unit of the laboratory, the **Immunomodulators** team, led by Dr. Gregory Ghyka. This group's priority has been researching and producing alpha-interferon and human interleukin-2. The preparations of these cytokines, obtained in the lab, have been used in studies of local treatment of skin virus diseases, eye virus diseases and epitheliomas. Since 1992, under the leadership of Dr. Cornel Ursaciuc, were studied other inhibitory substances for malignant proliferation, from the kinase inhibitors group, under contract with the University of Leuven, Belgium.

Also in 1984 was created the **Special Unit for animal husbandry (Animal Care Unit)**, led by Dr. Vet. Silvia Dima. Since 1986 the unit is taken by Biol. Savi George, who will lead a group of **Experimental Models** attached to the Animal Care Unit. In 1993 this unit was the source of animals that have served to the first monoclonal antibodies in the country, by a group led by Acad. Laurențiu M. Popescu, general manager of the Institute, consisting of immunologists from the institute and Department of Cellular and Molecular Medicine and Pharmacy "Carol Davila", Bucharest. Since 1998 has started the upgrading of facilities for animal breeding, such that in the present the Animal Care Unit is operating at international standards and holds animals *inbred* and transgenic lines, used for research models in the institute departments or for collaborations. From the last trimester of 2009, the Animal Care Unit is led by Dr. Vet. Bogdan Marinescu, and from 2012 becomes an independent unit.



Acad.  
Laurențiu M. Popescu

Until 1991, Immunology Laboratory worked in the described structure. The research of Immunochemistry Group, led since 1980 by Dr. Biochem. Doina Onică, and since 1986 by Dr. biol. Alexandru Bancu, were focused on the study of immunotoxins and lectins. The Immunopathology group, led since 1982 by Dr. Carmen Stroilă, has oriented to studies of tumor immunology by evaluating the antitumor immune response and standardization of immunodiagnostic techniques in malignant tumors.

In 1991 the Cellular Immunology team emerged from the composition of the lab, constituting itself as a separate group moved to the Institute of Virology. All then the Nuclear Unit left the structure of the lab, and Micro-Unit was dissolved.

In 1992, the Immunology Laboratory became the **Immunology Department**, consists of two laboratories: **Immunochemistry**, led by Dr. biol. Alexander Bancu and **Immunopathology**, led by Dr. Cornel Ursaciuc, this laboratory has three collectives: **Immunodiagnostic** (Biol. Dan Ciotaru), **Immunomodulators** (Dr. Cornel Ursaciuc) and **Clinic Immunochemistry** (Dr. biol. Doru Gabor). The scientific activity of the two laboratories of the Department has acquired interdisciplinary character, both performing basic and applied studies, based on collaboration with clinical units. These studies had as major objectives the investigation of the immune system cells, antitumor immunotherapy (with cytokines, immunotoxins, enzyme inhibitors), autoimmunity, murine experimental models of tumor immunology, investigative techniques in autoimmune diseases and malignancies.

Laboratory of Immunopathology kept immunodiagnostic business benefits, and since 1996 a part of department specialists are working in the Center for Diagnostic of the institute. The diagnostic work is coordinated by Dr. Cornel Ursaciuc and consist in hematological and immunological analysis for hospital outpatient clinical care units across the country.

In 1999 it was arranged the **Flow Cytometry Unit**, annexed to Immunopathology Laboratory. It has also been active in the cellular investigation by flow cytometry for all sections of the institute, covering a wide range of areas of use of the technique: immunophenotyping, cell cycle and apoptosis, cellular calcium measurements, determining HLA-B27 phenotype. At the initiative Dr. Mihail Hinescu, scientific director, the unit was rearranged in 2005 by using a confocal microscope, becoming **Cytometry Unit**, led by Dr. Eugen Radu until 2008, then by Chem. Mihaela Surcel. The unit is designed for cellular imagistic studies involving flow cytometry (analysis and sorting), fluorescence microscopy, confocal microscopy, image acquisition and computer processing. The unit does not have a collective at their own, but is intended for use by all research groups from institute, interested in the field.

After 2000, Immunochemistry Laboratory became **Immunobiology Laboratory**, headed by Dr. Bioch. Monica Neagu. The researches of this laboratory was concentrated to study the phagocytes activity, intracellular Ca<sup>2+</sup> ion dynamics, immunomodulation, inflammation-tumor relationship, phototherapy.

The Immunopathology Lab, led since 2000 by Biol. Dan Ciotaru, was focused on studying the significance of immunodiagnostic tests in inflammation and autoimmune diseases, the immunodiagnosis of malignant tumors, the characterization of T-regulatory lymphocytes, analysis of immunomodulatory placental extracts, experimental models of therapy and autoimmunity.

In 2002, at the initiative of Acad Laurentiu M. Popescu, general manager, and with the support of a priority research project Viasan, was founded the **Biobank for Tumor Cells and Nucleic Acids (BTCNA)** associated with Immunology Department, designed for cryopreservation and studies of biological samples derived from blood and malignant tumors. The take-over activity, processing and cryopreservation of samples was led until 2009 by Dr. Bioch. Carolina Constantin, and currently by Biol. Maria Dobre. Originally organized in collaboration with UMF "Carol Davila" Bucharest and open for cooperation with all the laboratories from the institute, BTCNA acts as an objective with perspectives in cellular and molecular *screening* of cancer.

The year 2007 marks the beginning of implementation of **Immunogenomics Unit**, supported by funds from a project of PN2-Capacities Programme. The unit is expected to enter fully into operation from 2010. Associated with Immunopathology Laboratory and to the TCNAB, the unit is designed in the first stage to the boundary studies in oncology,

internal medicine, pediatrics, rheumatology, transplantology etc. The unit is equipped to perform gene analysis (genotyping, gene expression, mutations) and determination of soluble and cellular markers (tumor antigens, receptors, cytokines). The unit is coordinated by Dr. Radu Huică and will work with the Department of Pathology and Laboratory of Genetics, which helped its endowment.

Also in 2007, due to the need to diversify the diagnostic benefits under the contract CASMB, there was organized the **Microbiology Laboratory** in location of Clinical Immunochemistry collective who has been dissolved. The laboratory is headed by Dr. Simona Chirlomez.

Since 2009 in the structure of Immunobiology Lab appears **Imunoproteomics Unit**, led by Dr. Bioch. Constantin Carolina. This unit was necessary because of growing concerns and research contracts of protein biomarkers with immunological significance, tested by specific proteomics methodologies (micro-EF, ELISA, chemiluminescence, densitometry etc.)

Since its foundation in 1969, Immunology Department was headed by the following:

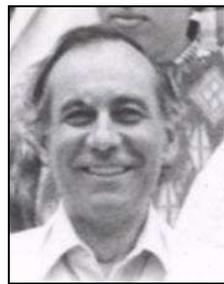
- Dr. Mircea Dumitrescu (1969-1972)
- Dr. chim. Victor Gheție (1972-1980)
- Dr. Andrei Sulica (1980-1991)
- Dr. Grigore Ghyka (1991-1992)
- Dr. biol. Alexandru Bancu and Dr. Cornel Ursaciuc (1992-2000)
- Dr. Cornel Ursaciuc (2000 to present).



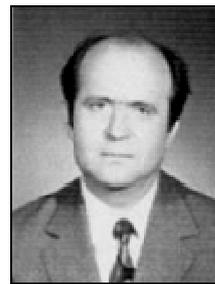
Dr. chim.  
Victor Gheție



Dr.  
Andrei Sulica



Dr.  
Grigore Ghyka



Dr. biol.  
Alexandru Bancu



Dr.  
Cornel Ursaciuc