Molecular Medicine

History of the laboratory

The laboratories of molecular biology have appeared in Romania in the early 1990s. The first point of work was formed in Cantacuzino Institute in 1993, with the following specializations: bacterial antibiotic resistance and infectious hepatitis diagnosis. For a few years since its foundation this workstation led by Dr. Mioara Damian worked as a centre of education in the field of molecular biology too, organizing annual workshops with support from the Pasteur Institute of Paris. Another laboratory was established in the same period in the Institute of Inframicrobiology „Stefan S. Nicolau” under the direction of Dr. Repanovici.

In 1997 it was founded the third laboratory of molecular biology in Romania, in the National Institute of Pathology "Victor Babeş", with the efforts of Acad. Prof. Dr. Laurentiu M. Popescu, Director of the Institute, and Dr. Cristiana Iosef, CP II, specialised in Molecular Immunology. The profile of this laboratory was the DNA analysis of HLA complex (Human Leukocyte Antigens) in order to study the compatibility between donors and recipients of solid organ transplants. The greatest achievement in this field was a successful analysis of HLA compatibility in the first heart transplant performed in Romania. Dr. Iosef has optimized also genetic studies of the human T leukemia virus (HTLV I) and molecular biology techniques applied in neuronal biology and dermatology. In the years 1995-1999 the laboratory received material (reagents and working materials) as well as scientific support from the Washington University - School of Medicine of St. Louis Mo, USA (Molecular Immunology laboratory led by Prof. Lee Ratner) and from University of Montpellier, Centre de Molecules antivirales (INSERM 243, France, led by Prof. Christian Devaux).

This support has been possible as a result of the doctoral programme of Dr. Iosef (Fulbright Scholar in these institutions for 3 years). In 1998, Dr. Iosef started a new doctoral program in Immunology at Ohio State University, USA, finished in 2002. Currently she is 1st-class scientist in Children's Health Research Institute, Dept. of Pediatrics, The University of Western Ontario, Canada. Dr. Iosef is the group leader in the isolation and characterization of stem cells with application in diseases of premature infants. Between the years 1999-2009 she became an author and co-author of several studies of Immunology published together with teams from the USA and Canada in scientific journals of a broad impact in Molecular Immunology.

Since 1997, in our laboratory were also conducted studies focused on the cellular death. Dr. Cezar Țigaret, Dr. Cristiana Iosef, Dr. Bogdan O. Popescu and Acad. Prof. Dr. Laurentiu M. Popescu achieved the first primary cultures of rat brain in Romania, and later the first cultures of granular neurons of rat cerebellum in the country. On these experimental models were made cytotoxicity studies testing the protective or deleterious effect
of the different medicinal substances, as well as studies on the cytotoxicity mechanisms, such as the measurement of intracellular concentration of calcium and proteases activation. Between 2001 and 2006 these studies received an important support from two VIASAN grants. Since 2003, when Dr. Bogdan O. Popescu became head of the laboratory, the activity in the field of neurosciences has diversified. In addition to the analysis of cell death mechanisms there were carried out more studies regarding the expression of trophic factor receptors in the central and peripheral nervous system, the distribution and expression of tight junctions proteins in the brain, new models of neurodegeneration in Alzheimer and Parkinson diseases, supported by CEEX and PNCD grants.

Since its establishment, the laboratory of molecular biology was a training center for students and young doctors, many of whom have continued research activity abroad, such as: Dr. Mircea Oprică, Dr. Eduard Nedea, Dr. Andrei T. Popescu, Dr. Sergiu Abramovici, Dr. Radu Stoica, Dr. Maria Ţuineag.

We are currently working in the following fields: cellular and molecular aspects concerning neurodegenerative disorders (with a focus on blood brain barrier research), neuromuscular diseases diagnostic and research, skeletal muscle biology, peripheral nerve blood barrier, interstitial cells in skeletal muscle regeneration.