University of Medicine and Pharmacy Tîrgu Mureş,
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HABILITATION THESIS

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CLINICAL RESEARCH IN PEDIATRIC CARDIOLOGY

Habilitation thesis

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Summary

My involvement in clinical research started soon after I graduated the University of Medicine and Pharmacy from Tîrgu Mureș in 1978, as medical researcher, pediatrician - practitioner at Medical Research Center Tîrgu Mureș - in the Research Team of Cardiovascular Surgery Clinic – with my personal research: "**Improving infant morbidity and mortality through medical and surgical treatment of congenital heart disease in infants and small children"** and the research topic of the cardiovascular clinic being "Heart valve replacement with biological valves".

As a researcher at the Medical Research Center Tirgu Mures, pulmonary hypertension has been a topic of interest in my early years of scientific activity; in 1990 I obtained a patent for the device and technique that I developed for this - Patent OSIM nr. 100812/11.06.1990 – Endovascular Pulmonary Puncture Biopsy – method and device performed to collect samples of pulmonary tissue in cases of pulmonary hypertension.

As a result of professional and scientific activity in the field of pediatric cardiovascular pathology, I was given the opportunity to set up the first department of pediatric cardiology in the country, being appointed Head of the Department of Pediatric Cardiology – Clinic of Pediatrics no.1 from Tîrgu Mures County Hospital in 1981, and being appointed Head of Department in 1995 in Tirgu Mures Cardiovascular Center, Pediatric Cardiology Clinic - the first pediatric cardiology clinic with the development of a clinical unit for diagnosis, treatment and intensive care in pediatric cardiology, of a team of high professional competence - these were basic elements in creating premises for establishing the first pediatric cardiovascular surgery and neonatal emergencies center in Tirgu Mures university center.

In 1999 I finalized my PhD thesis, with a research dedicated to Congenital Heart Diseases, entitled “Research on the correlation between cardiac and extra-cardiac congenital malformations”, defended in 11.06.1999 and obtaining the PhD title as a result in 2000.

I became a member of the academic community of the University of Medicine and Pharmacy in 2001 as a lector and until now, as a professor, I have dedicated a great part of my energy and my time in education of young students, trying to involve them in our research activity. This resulted in the strengthening of our research group after including many young researchers

with interest in congenital cardiovascular diseases. This activity was materialized in 16 graduation papers on pediatric cardiology.

As a result, I created a team of Cardiovascular Research within the Pediatric Cardiology Clinic, in which we diversified our research activity in four main directions: cardiovascular imaging, research dedicated to epidemiology and genetics in CHD, fetal cardiology, and pulmonary arterial hypertension.

In 2007 I won two national grants as **project director**: 1 IMPACT project „Center for early diagnostic, education and professional development in congenital heart diseases, Acronym – DIACORD (Contract number – 349/2007) and 1 PNCD II project, "Translation of genomic researches regarding the etiology of congenital Heart Diseases into innovative methods for screening, prenatal prevention, genetic diagnostic and 3D imaging", acronym – **MAMI,** with me as **project director,** including a consortium of 2 public universities, a non-profit organization - was selected for financing in the 2007competition of the PNCD II programme - Partnerships (ctr. no. 41-069/2007) and was successfully finalized in 2010, the results being disseminated in 4 international and 4 national congresses and 18 publications.

In the period 2006-2010 I was a member of the research team of 5 projects / research grants.

One of my main professional achivements was introducing new methodologies and protocols in clinical practice of cardiovascular desease in the pediatric age group.

I organized the first national symposiums of pediatric cardiology with international participation and the first fetal echocardiography courses in 2008 in collaboration with The Association for European Paediatric and Congenital Cardiology, events that have been organized up to now.

The most recent chapter of my professional achievements in research is represented by initiation of several clinical studies in most of them as Principal investigator, country head investigator or subinvestigator, responsible for initiation of the Health Ministry (HM) national program for the treatment of PAHT in the pediatric age group, development of protocols for the pediatric age group for inclusion in the national program for the treatment of PAHT.

I elaborated the Curriculum for training in pediatric cardiology, a program of further studies in Pediatric Cardiology, accepted by MH and I initiated the first training program in pediatric cardiology, being the National Responsible of the study program and responsible for running the program in

the university center Tirgu Mures, The Cardiology Clinic III becoming the first Center of the Pediatric Cardiology training Center in Romania since 2013.

My **further career development plan** as a continuation of my previous professional and scientific achievements includes:

- introduction and development of other cardiovascular imaging technologies: 3D echocardiography, 3D transesophageal echocardiography (TEE), speckle tracking, and fetal echo to create a high level imaging platform.
- continue our research themes in pulmonary arterial hypertension, genetics
- development of fetal cardiology
- improvement of diagnosis and management of neonatal cardiovascular emergencies
- training program in pediatric cardiology, which were continued through direct involvement in the development of the national network of pediatric cardiology.