HEART FUNCTION IN HEALTH AND DISEASE
DEVELOPMENTS IN CARDIOVASCULAR MEDICINE

HEART FUNCTION IN HEALTH AND DISEASE

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This book is dedicated to

Professor Otakar Poupa

for his distinguished contribution to
Developmental and Comparative Cardiology.
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Preface - A tribute to Otakar Poupa on his 75th birthday

Born in the hilly landscape of Eastern Bohemia on 17th October 1916, his early interests oscillated between biology and plastic art. Following the family tradition, he started his medical studies at the Charles University in Prague in 1935. His interest in basic sciences led him to work in the Department of Physiology headed by Prof. V. Laufberger, who discovered the ferritine, iron containing protein. Still as medical student, Poupa published his first paper dealing with the modification of the vascular effects of catecholamines by sexual hormones.

When the Charles University in Prague was closed during the German occupation (17th November, 1939) and research work was prohibited, he continued his work in endocrinology in a laboratory supported by the pharmaceutical industry. After Second World War, he returned to the Department of Physiology (in 1945). He started experiments on the metabolic antagonism of structural analogues (antithyroid drugs) which led him to study their interactions with nucleic acids (pyrimidine analogues). He performed similar investigations on histamine and its structural analogues. The results were published in two monographs and formed the basis of his postdoctoral thesis (1947). Soon thereafter he became Associate Professor of Physiology.

Unfortunately, after communist coup d'etat in 1948, Dr. Poupa was expelled from his university position and permitted only limited research facilities. During the political "thaw period", he was allowed to resume his academic position (1959) and, after 1961, became full Professor of Pathological Physiology at the Faculty of Pediatrics of the Charles University in Prague. There and in his laboratory at the Institute of Physiology, Czechoslovak Academy of Sciences, he started his studies on the onto- and phylogenesis of the cardiac muscle for understanding the basis of fetal and neonatal cardiology. This area of cardiological research, attracted many young students and became a speciality of the "Prague School" of developmental and comparative cardiology. These fruitful years
Dr. Otakar Poupa

(1959-1968) culminated during the "Prague Spring" 1968, when Dr. Poupa was elected as Corresponding Member of the Czechoslovak Academy of Sciences and honoured by a State Prize for his basic studies in cardiology.

For a short period in his life, he was active in politics. As one of the four authors of the heretic "2000 Words Manifesto" (together with macromolecular chemist O. Wichterle, cardiologist J. Brod and writer L. Vaculik), he emigrated after the Soviet occupation of Czechoslovakia in August 1968 and settled in Scandinavia for two
decades. First in Sweden (Goteborg - A. Carlsten, B. Folkow) as Fellow of the Swedish Medical Research Council, in Denmark (Aarhus - K. Johansson) and in Norway (Bergen - K. Helle) as Visiting Professor. He found there favourable conditions for comparative cardiological studies and was able to continue his research on the hearts of rare and "unorthodox" vertebrates from which he tried to reconstruct the natural history of the heart ("The Heart Story", summary of this work, is published in the present volume). In 1976, on his 60th birthday, he was honoured for his research in comparative cardiology by an Honorary Doctorate of the University of Goteborg.

Otakar Poupa was also closely associated with the foundation on International Study Group for Research of Cardiac Metabolism (later International Society for Heart Research), the project which was initiated in Prague in 1964 during the International Congress of Cardiology (together with R. Bing and E. Bajusz). Otakar Poupa obtained the honorary membership of this Society in 1976.

The "velvet revolution" in November 1989 allowed him to visit Czechoslovakia again. On the occasion of his 75th birthday he was awarded the highest scientific assessment of his native country "The Merit of Sciences and Humanity" J.E. Purkyne and the "Golden Medal of the Masaryk University" in Brno. Despite his difficult life and scientific history, Dr. Poupa published 260 scientific papers, 6 monographs and many essays dealing with cultural life. The best evidence of his scientific personality are, however, the many pupils-experimental cardiologists working not only in Czechoslovakia, but also in many European countries, as well as on the American continent.

We wish him many more fruitful years in his beloved field, to which he has dedicated most of his life's work. And, of course, in his favourite hobby, painting, in which he has attained creditable renown. This book, based on some selected articles from the Cardiovascular Program at the Regional Meeting of the International Union of Physiological Sciences, has been put together in honor of Dr. O. Poupa to celebrate his achievements in heart research and recognize his stimulating leadership in the field of experimental cardiology.
It has been the lifetime desire of Dr. Poupa to clearly define the scientific basis of cardiology. He focussed his attention in this area because early on he recognized that heart disease is a major killer in the Western world and its trend is on the rise in developing countries. As the majority of cardiovascular deaths are related to myocardial ischemia, it is considered crucial to understand various aspects of ischemic heart disease. In this regard, it is noteworthy that ischemic heart disease is commonly associated with atherosclerosis, coronary spasm, as well as thrombosis leading to the development of arrhythmias, cardiovascular cell damage, myocardial infarction, cardiac hypertrophy and congestive heart failure. Furthermore, it is also important to appreciate various physiological, electrophysiological and biochemical processes in the normal heart if we are to understand their significance under pathological situations. This book containing 24 chapters has been organized in five sections to provide an outline of a complex problem in a convenient manner. One section of this book is devoted to shedding light on the restructuring and ontogenetic changes in the developing heart whereas in the next section some hypertrophic alterations due to chronic hypoxia are described. The third and fourth sections of this book are concerned with the regulation of cardiac channels as well as signal transduction mechanisms and cardiac electric field and these impart a comprehensive knowledge in the field of arrhythmias. The fifth section contains some pathophysiological events during the development of cardiac hypertrophy and heart failure. All these areas encompass a significant body of new information that should be valuable to those who work in the field of cardiovascular sciences, as well as those who are engaged in treating patients with heart disease.

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