

THE THEORY OF SEASONAL PROGRAMMING OF LONGEVITY

PIOTR CHMIELEWSKI

*Department of Anatomy, Faculty of Medicine, Wrocław Medical University, Chalubińskiego 6a, 50-368 Wrocław,
e-mail: piotr.chmielewski@umed.wroc.pl*

Summary

A growing body of evidence suggests that some chronic diseases in adulthood as well as longevity are associated with specific patterns of growth and nutrition in early life. Aging is a highly complex process that manifests through molecular, metabolic, cellular, and physical changes in all types of tissues. Likewise, human lifespan seems to be a remarkably pliable process, which is not programmed. On the basis of extensive researches on links between diet, nutrition, and infections in the prenatal development, and various mechanisms of epigenetic regulations of gene expression, a theory of seasonal programming of longevity has been recently formulated. Numerous studies show that some traits programmed by environmental and nutritional exposures during fetal development can affect health in adulthood and can be transmitted to further generations. The purpose of the present article is to provide a summary of research findings and some theoretical explanations that indicate that health in adulthood can be affected by early developmental conditions (e.g. diet, nutrition, and even ambient temperature at birth), and longevity can be influenced by such factors acting upon the organism during early ontogeny.