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Special Issue Reprint

Molecular Insights into the Developmental Origins of Health and Disease

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In 1986, David Barker reported evidence in *The Lancet* linking prenatal nutrition with the later development of coronary heart disease, introducing the concept that early-life conditions influence adult disease risk. This work laid the foundation for the Developmental Origins of Health and Disease (DOHaD), which proposes that environmental exposures during critical developmental periods shape long-term health outcomes. Over the past several decades, DOHaD research has advanced substantially through improved analytical technologies, expanding epidemiological data, and deeper mechanistic insights into developmental biology. These advances have strengthened the evidence that early-life environments, including maternal nutrition, metabolic status, and broader external exposures, can program physiological systems in ways that influence disease susceptibility across the life course. This Special Issue highlights the complex interplay of internal and external determinants affecting fetal genetics, biochemistry, and physiology. Eight contributions from leading investigators present recent advances that deepen understanding of developmental processes underlying health and disease. Collectively, these papers reinforce a life-course model of health that emphasizes preconception care, maternal well-being, and optimal early childhood development as foundational strategies for reducing the risk of chronic disease in later life.

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