Preface: A special issue on nuclear receptors with a special view on the molecular basis of disease

This special issue focuses on nuclear hormone receptors with a direct view on their involvement in the pathophysiology of several conditions. Indeed, nuclear receptors have been implicated in the pathogenesis of highly frequent diseases such as metabolic syndrome and various types of cancer. Furthermore, most of these 48 proteins are intriguing pharmacological targets since we actually have in clinic several molecules that directly modulate nuclear receptor transcriptional activity as therapeutic strategies. We thus accepted the invitation from the editors to dedicate an entire issue to this family of transcription factors that regulate very important processes in our organism ranging from development, metabolism, and reproduction. Thus, a wide variety of conditions are described in this issue with a multidisciplinary analysis. The reader will find chapters that: a) describe the physical–chemical structure of these proteins; b) underline the importance of bioinformatics to discover novel transcription targets of these receptors; c) present new methodological studies on how to identify the function of these receptors in terms of spatial and temporal distribution in our body. A series of chapters will then describe the relevance of nuclear receptors in different type of diseases. There are reviews on the importance of nuclear receptors in cancer, ranging from hepatocellular to colorectal cancer and hematopoietic malignancies. Other articles focus on the role of nuclear receptors in the pathogenesis and/or treatment of metabolic diseases such as metabolic syndrome, dyslipidemia, atherosclerosis and diabetes. Finally, there are articles that underscore the function of nuclear receptors and their co-regulators in neurological diseases such as Parkinson, and in conditions affecting the reproductve system and the urinary-kidney function.

The success of this issue will depend on its capacity to attract colleagues who are not actually working on nuclear receptors and to provide a space for discussion in the translational relevance of nuclear receptor function in human disease. A lot of work has been done to achieve this goal. A special thanks goes first to all the authors for their important contributions. Then, we thank the reviewers, who did a patient and superb job in helping and increasing the quality of the final manuscripts. Finally, we express our gratitude to the editorial office for the everyday unique support to generate this issue. We hope you enjoy reading this issue and you get intriguing ideas for your future research plans.

Antonio Moschetta is a physician scientist. He is the head of the laboratory of lipid metabolism and cancer at the Consorzio Mario Negri Sud and he works as internist at the Clinica Medica “Muri” at the University of Bari in Italy. He had been trained in Italy as Medical Doctor at the University of Bari; he took his PhD in The Netherlands at the University of Utrecht Medical Center and he did his postdoctoral studies at The Howard Hughes Medical Institute at The University of Texas Southwestern Medical Center, Dallas, USA. Moschetta laboratory’s main interest focuses on the basic processes that regulate lipid metabolism in the gastro-intestinal and hepatobiliary tract. The group aims at investigating how nuclear receptors could transcriptionally link the metabolism of glucose and lipids with the initiation and/or progression of the cancer progress in the intestinal epithelium. His specific strategy is to identify the interconnection of transcriptional and metabolic pathways in the gut–liver axis with relevance to systemic disease such as metabolic syndrome and cancer. His latest focus is on how nutrients could activate and/or inhibit nuclear receptor transcriptional activity, thus linking diet to DNA. His group is looking for designing novel gene expression maps that could predict the relationship between nutrients and evolution of cancer. The final hope is that clustering the genes that depict the invasive picture of certain tumors or the increased cardiovascular risks of specific subjects would lead to a better molecular understanding of the pathogenesis and in the future more effective ad personam therapeutic approaches. The recent work of Antonio Moschetta is supported by the Italian Association for Cancer Research, Telethon Foundation, European Community’s Seventh Framework Programme, Italian Ministry of Health (Young Investigator award), Italian Ministry of Research and Education (IBAS award), University of Bari, Italy.

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