

Epigenetics protocols, 2nd edition**Trygve O. Tollefsbol (ed)****Methods in molecular biology; vol. 791; 2011****Humana Press – Springer Verlag, Heidelberg, Germany****ISBN: 978-1-61779-315-8****Pages: 343; Figures: 54; €109,95**

Thanks to the creative effort of Prof. Trygve O. Tollefsbol (Department of Biology, University of Alabama at Birmingham, USA) we can handle the second edition in just seven years of this must needed volume devoted to the study of the epigenome. In the very same window-time the field of epigenetics is dramatically changed as for the technical tools employed by the pupils of this pervasive discipline: actually there is no one hot topics in biology (*e.g.*, development, differentiation, genomic toxicity) and medicine (*e.g.*, clinical genetics, to mention a few) that do not see epigenetics to play a crucial role for the advancement of knowledgements and the finding of new diagnostic and therapeutical approaches. This means that a broad audience of the scientific community can take advantage from this volume that is not a revised copy of the first edition (it cannot be since, as said before, these last seven years were a fast-running period for the epigenetics protocols that have been worked out) but a totally new one, bringing to up date the newly developed techniques. The effort Prof. Trygve O. Tollefsbol did was not only creative but titanic as well ! In fact, he did not *attempt to amass all of the epigenetic techniques that have been invented but rather the goal of this volume has been to highlight select techniques that have been mainstays in the field.* The result is a very useful tool to study the phenotypic expression of the genome and in particular how the epigenome is finely tuned by mainly two (among others, just remembering histone modifications) mechanisms: DNA methylation and chromatin configurations. The book is intended to provide researchers (both basic and clinically applied) with the necessary tools to understand and carry on researches in epigenetics. I am convinced that student could find some difficulties but I will suggest anyway them to buy this volume (eventhough it could be challenging for them) because it is presenting the

whole spectrum of approaches to study epigenetics, not forgetting the computational methods and the overview of the field (strictly speaking not simply an historical view) presented by Prof. Trygve O. Tollefsbol in a scrumptious chapter: *advances in epigenetic technology*. Here the reader becomes acquainted with techniques useful to study the epigenetic modifications at the level of specific genes and of defined genomic regions, in other words not only to analyze epigenetic modifications at genome-wide level. To give a snapshot of the high didactic quality of the chapters (twenty-three) here presented, Philippe Collas (University of Oslo) illustrates how a widely used technique in epigenetics studies like that of chromatin immunoprecipitation (*e.g.*, requiring large numbers of cells if you wish to locate the site of modified histones, transcription factors, *etc.*) can be used even when dealing with small cell number (1000 cells). Several other chapters are explaining the use of chromatin immunoprecipitation, two are particularly attractive to me like those coupling ChIP with quantitative PCR (to detect chromatin acetylation) or with bisulfite methylation sequencing analysis (to study the interactions between histone modifications and DNA methylation). Quite interesting for the histo- and cytochemical scholars are the chapters devoted to the study of the RNA-protein interaction *in vivo* (by RNA immunoprecipitation) and that presenting a protocol making use of formaldehyde-assisted isolation of regulatory elements to map open chromatin conformations. Several other chapters are specifically devoted to advanced scholars in the field (as an example, the intriguing chapter devoted to the quantitative methylation measurement at specific CpG sites) not only for the challenging conceptual tools the reader needs but also for the required instruments and the skilled methods to use them (High-Performance Liquid Chromatography just to mention one). I am sure that the readers will be excited when going through the book and will get insights on how introduce epigenetics aspects to enhance the results of their own researches.

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