

Editorial

## Welcome to the New Journal *Epigenomes*

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We are excited to introduce *Epigenomes*, a new journal that will serve the growing community of researchers who use omic approaches to dissect the epigenetic mechanisms underlying developmental and pathological processes.

In the past couple of decades, the growth of the field has been unparalleled, and the term epigenetics is now broadly utilized to indicate changes in gene functions that do not depend on changes in the sequence of DNA (e.g., naturally occurring variants or mutations) and that can be passed through cell doublings or generations. In slightly more loose terms, the “epigenome” refers to the aggregate of all variables that characterize the chromatin landscape and determine its structure and function (e.g., histone post-translational modifications (PTMs), DNA modifications [5′cytosine methylation (5meC) and 5′cytosine hydroxymethylation (5hmC)], non-coding RNAs (ncRNAs), *etc.*).

The meaning of the Greek prefix “epi” can take on different nuances, depending on the context. In the case of epigenetics, it perfectly fits the meaning of “on to”, if we are thinking of regulatory mechanisms, which come on top of the information provided by the genetic layer, and which allow all the multiple cells from the organism to have identical genetic material, but radically different phenotypes. The original meaning, however, has much more ancient origins, as it dates back to Aristoteles (384–322 BC), who used the word epigenesis (in this case, the best translation would be epi = after and genesis = formation) to describe the sequential development of the embryo after the semen had interacted with the female menstrual blood (*De Generatione Animalium*). Again, the fundamental insight here, is that a single cell is able to give rise, in a sequential manner, to all the organs in the body, and it is opposed to the so-called “preformist” theories, which instead postulated the existence of a preformed miniaturized individual (homunculus) inside either the sperm or the egg. The theory was later refined and corrected by eminent scientists, such as William Harvey (1578–1657) in his *Exercitationes de Generatione Animalium* (1651) and Caspar Friedrich Wolff (1735–1794) in his “*Theoria Generationis*”, laying the foundation for modern embryology. Later, in 1957, Conrad Waddington provided a more modern vision of the epigenetic landscape, describing the famous metaphor of marbles (cells) rolling down a slope, taking alternative paths or groves as they ultimately differentiate into postmitotic cell types.

Research through the years has shown that a lot of these theories are only partially correct; while we know that the inherited genetic material is a primary determinant of what will evolve from the fusion of an egg and a sperm [1], there may also be connections to some inherited acquired characteristics and environmental influence on our germ cells and future offspring [2]. Additionally, we know that we can now push those marbles back up the slope [3], and we have the tools to easily modify both the genetics and the epigenetic landscape of any cell we want [4].

It is precisely because we are living these incredible times that we think it is timely and exciting to launch our new journal, in the hope that more researchers will join the community interested in epigenetics, and that together, we will be able to make more fundamental discoveries, as well as improve human health.

*Epigenomes* aims at publishing articles that offer new insights into how the chromatin landscape is shaped, both during development and cell differentiation, as well as in the majority of human diseases.

The covered topics will include, but will not be limited to: histone PTM dynamics, novel insights into the functions of chromatin writers, readers and erasers, transcription regulation, imprinting and development, cellular differentiation and reprogramming, nucleosome assembly, positioning and remodeling, DNA modifications and chromosome structure and function. We strongly welcome novel techniques that will enable functional investigation of epigenomic phenomena.

All manuscripts submitted to *Epigenomes* (ISSN 2075-4655) will be peer-reviewed by experts in the field. *Epigenomes* aims to be a center of reference for all scientists involved in epigenetics studies, for this it will be an open access journal to ensure the availability of information. Let this be the beginning of a great adventure.

**Conflicts of Interest:** The author declares no conflict of interest.

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