

**Evolutionary dynamics of mammalian karyotypes****Roscoe Stanyon and Alexander Graphodatsky (eds)****Karger Press, Basel, Switzerland, 2012****ISBN: 978-3-318-02254-4****Pages: 208; Figures: 48; €91,00**

This special volume of Cytogenetic and Genome Research (edited by Roscoe Stanyon, University of Florence and Alexander Graphodatsky, Siberian division of the Russian Academy of Sciences) is dedicated to the fascinating long search of the forces behind the evolutionary dynamics of mammalian karyotypes, revealed after the *hypotonic miracle* of the 1950s.

Fifteen chapters cover all the mammalian taxa providing both an historical and an updated (molecular, generally speaking) view of the relations between genome composition/organization/structure and the different types of chromosome rearrangements involved in the evolutionary changes of mammalian karyotypes. This is still an open hunting and all the empty rooms must be filled by researches based on the integration of genome sequencing projects with the classical comparative cytogenetic approaches. Quite notably and interesting for the cytochemist readers is the role played by technical advances (which are typically pertaining to cytochemistry) in pinpointing the fine chromosomes structure and composition. Robust comparisons were thus acquired with the (dreamed) aim to work out

both the ancestral mammalian karyotype and the accurate rate of the chromosome changes occurring in a specific group. Comparative molecular cytogenetics in Marsupial, Monotreme, Xenarthra and Afrotheria is presented in details and the readers get splendid and clear visual information from the numerous color figures that help to understand the dynamic movements of genome sequences and blocks through the evolutionary time.

At the end of this fascinating reading, it becomes clear that many aspects have been elucidated although there is still lots to do since the ultimate *reasons for the differences have eluded our understanding*. This is very exciting and should stimulate each scientists to contribute with new conceptual and technical tools!

I gave my contribution writing (together with Ernesto Capanna) a chapter of this book on the genome size. By doing so we enjoyed playing with the evolutionary dynamics of the karyotypes within the mode and tempo of genome size variation and by dissecting extinct and extant placental genomes at the molecular level, Capanna and I provided speculative views of genomic ecology symmorphosis: the quantitative match of design and function integrating cell - molecular biology and ecology.

Our goal is to stimulate young colleagues... hopefully we will succeed!

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