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Big data in noncoding RNA and precision medicine

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The living organisms on the earth from prokaryotes to eukaryotes have been proliferating for billions of years. To date, they form in more complicated structure and function in more perfect ways. However, what really determined the complex phenotype, structure and function of living organisms? Where do they store those huge amounts of information? And how do they operate? All of these have been keen questions for people to explore. What has been astonishing and puzzle is the fact that life is not just a simple group of molecules instead, it is highly organized. There is connections between nucleus and cytoplasm, a clearly work division between different organizations and synergy cooperation within organs. Therefore, a normal living organism is extremely multi-level and dynamic. The complexity of the organism is not only reflected in the complexity of the structure of DNA information but also on the implementation of the information and operation rule. This report mainly introduces the rise of noncoding area, great innovation opportunity it offers and the role of big data in this field. Meanwhile, this report also introduces what the scientists has been explored for the associations between genotype and phenotype. As a result, series of new concepts such as translational medicine, personalized medicine and precision medicine etc. have been put forward by medical scientists. All of these imply that the big changes for medical system from diagnosis and treatment to health care are upcoming. It also suggests the birth of a new generation of huge health care industry.

Biography

Runsheng Chen, Principal Investigator at Institute of Biophysics, CAS, is an Academician of the Chinese Academy of Sciences (CAS) and an Academician of the International Eurasian Academy of Sciences. He is a member of Human Genome Organization (HUGO), a member of the Biomacromolecule group of the Committee on Data for Science and Technology (CODATA) and a member of the bioinformatics professional committee of the International Union of Pure and Applied Physics (IUPAP). He is now the General Secretary and Vice President of Chinese Society of Biophysics and has published more than 130 papers in SCI.

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