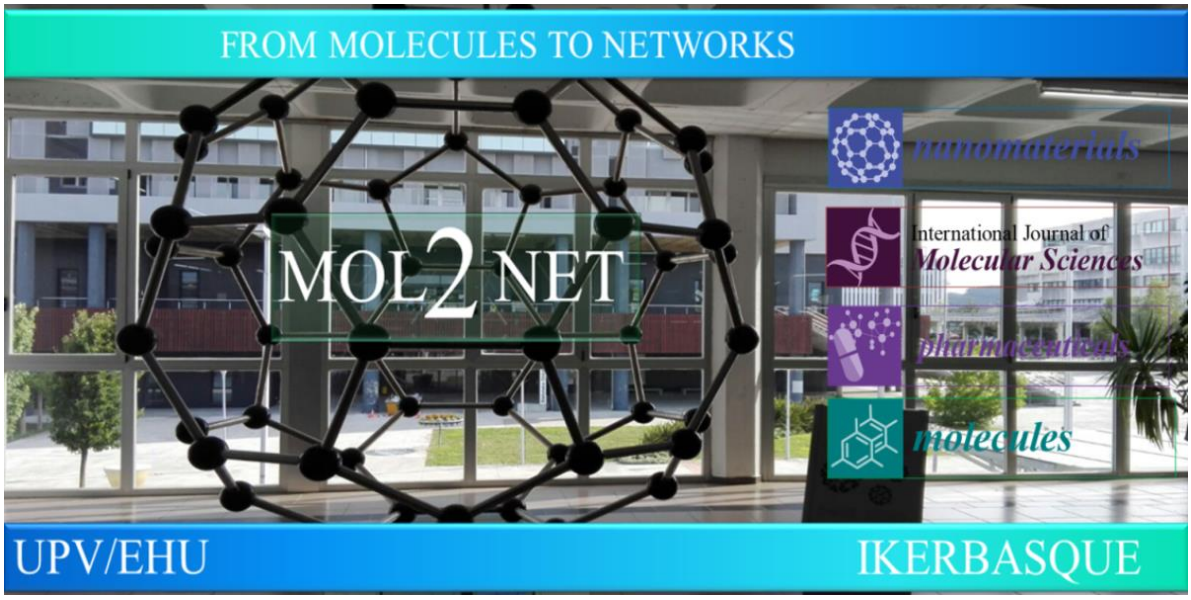


The models of healthcare information systems are used for personalized medicine and preventing disease development, which is based on using Electronic Health Records (EHRs) and a huge amount of complex biomedical data and high-quality -*omics* data [1]. -*Omics* data, that is, genomics and postgenomics technologies, produce a huge amount of complex biochemical data related to processes in the living organism [2]. According to the objective of the study exist different -*omics*. The most important are summed up in the following table (Table 1.).

**Table 1.** -*Omics* discipline.

| OMICS | AIM OF STUDY |
|---|---|
| **Genomics** | Study of the set of all genes in an organism (non-coding parts of DNA) |
| **Epigenomics** | Study of all epigenomic modifications on the genetic material within a cell |
| **Transcriptomics** | Study of the expression level of all RNAs in particular cell, or cell population |
| **Proteomics** | Study of all possible interactions that a protein can present, complete set of proteins expressed by a genome in a given cell type or organism, under defined conditions |
| **Metalobomics** | Study small-molecule compounds within a cell, an organelle, a tissue, an organ or an organism |

| | |
|---|---|
| **Interactomics** | Study of the entire set of physical and indirect interactions between proteins and other molecules within a particular cell. Consequences of those interactions. |
| **Pharmacogenomics** | Study which combines pharmacology and genomics in order to analyze the role of the genome in individual's drug response |
| **Diseasomics** | Study of all diseases and disorders of an organism, often focusing on those diseases and disorders caused by genetic modifications |

For this reason, big data can be applied in healthcare and medicine, taking into account the large and complex data that exist, which are difficult to analyze and manage with traditional applications [3] [4]. In general, the term big data is described by the following 6 characteristics: value, volume, velocity, variety, and variability, although some authors have used more than these 6 properties. Is important to know that the security and privacy of all patients are guaranteed. To claim this security and privacy, the big data analytics software should use advanced encryption algorithms and pseudo-anonymization of personal data.

In conclusion, applications of big data analytics in medicine and healthcare is a very promising process that can improve patient-based service, detect symptoms and diseases earlier, as well as, supply better treatment methods [5] [6] [7]. As all technology is improving, nowadays, smartphones can be used to deliver personal messages to patients related to their health and the treatment needed.

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