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Big data in medicine: Synchronizing life science with data science

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Medicine is life science, big data is data science; and, there is an adage that, if you are not informed, you will be deformed. There is a big gap in aggregating more and more information around multiple scales for what constitutes a disease–from the DNA, proteins, metabolites, to cells, tissues, organs, organisms, and ecosystems. These scales need to be modeled by integrating big data; doing this, the model will evolve, develop, making prediction more possible for individuals. Presented in this paper is big data, extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions. The paper objective is to use big data in synchronizing life science with data science in order: 1) to build better healthcare profiles; 2) to build better predictive models around individual patients so that we can better diagnose and treat disease; 3) to help medical industry understand biology of disease; and 4) to aggregate more and more information around multiple scales for what constitutes a disease. Wearable devices and sensors such as glucose monitors that interface with digital apps can be worn by individuals, who connect with healthcare providers; but the problem surrounding big data in medicine is convincing and training non-computational individuals to accept big data whether for decision making on the part of the healthcare providers or privacy assurance on the part of patients.

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