

Integration of multi-omics data with artificial intelligence

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Propositions

1. The novelty of circular RNAs makes them a new subset of molecular identities that may further describe the events occurring at the subcellular level during exposure to toxic environments (Thesis).
2. The gap between transcriptomics and proteomics changes informs us of missing players in the connection between the two OMICs, such as the ones intervening in the post-transcriptional regulation (Thesis).
3. Supervised machine learning algorithms provide an optimized basis to predict proteomics values through the integration of diverse multi-omics data, in addition to the inherent characteristics of each protein (Thesis).
4. Training machine learning algorithms to identify genes of interest based on expert-selected data allows the automatization of the process (Thesis).
5. The field of Big Data brings with it the complexity to analyze and integrate massive datasets, where quantity requires of quality to bring forth both discoveries and applications (Discipline).
6. The use of artificial intelligence, while potent, is not a one-size-fits-all tool; and requires honesty to understand how applicable a model can be (Discipline).
7. Biology is per se a very intricate set of interactions at different levels of complexity, and thus the arrival of high-throughput technologies is just the start of being able to describe and decipher the complexity behind it (Discipline).
8. Novel changes have been identified at the circular RNA level in the context of cardiotoxicity, while providing new insights in the multi-omics integration through a machine learning approach (Impact).
9. "Do not pray for easy lives. Pray to be stronger men. Do not pray for tasks equal to your powers. Pray for powers equal to your tasks. Then the doing of your work shall be no miracle, but you shall be the miracle." — Phillips Brooks
10. "I used to respect people with a Ph.D., but everything changed when I realized I might become one of them." — Juan Ochoteco Asensio
11. "Estimeu els vostres enemics, feu bé als qui us odien, beneïu els qui us maleeixen, pregueu pels qui us calumnien." — Lc 6, 27-28