PREDICTION METHOD FOR THE PHENOTYPIC EFFECTS OF MOLECULAR AGENTS WITH THERAPEUTIC POTENTIAL

A research group form Universidad de Málaga and CIBER has developed a bioinformatic pipeline for predicting the phenotypic effects of different molecular agents with therapeutic potential

The Need

Although most drugs act with a primary target responsible of the desired therapeutic effect, they often also interact with other secondary targets (off-target) that can produce side and adverse effects (ESAs).

ESAs are the main cause of drug withdrawal from the market because of patient's health consequences, implying also considerable economic loss.

Up to now, no previous methodologies have been developed looking for interactions among target proteins of drugs and ESAS, nor analyzing interactions of co-dependence associations or drug-phenotype associations modelling complex networks at four levels: agents, targets, biological entities and phenotypes.

The Solution

The present invention offers a predictive method of phenotypic effects of different agents with therapeutic potential (such as drugs, small molecules, RNAs) though their interaction with biological targets related both with biological and pathological entities, linked to one or several phenotypes.

The developed methodology allows to identify significative associations of those agents and phenotypes, offering a valuable tool for developing targeted therapeutic strategies.

Innovative Aspects

- This proposal offers a unique methodology based on the modeling and integration of the drug-disease relationship network and a tripartite network of phenotypes-diseases-targets to predict the associations between drugs and phenotypes. The present invention addresses this issue by identifying drug-phenotype associations, which can be used in predicting the potential effects of drugs, including both side and therapeutic or desired effects, and also obtaining information about the underlying molecular mechanisms of one or several targets.
- The methodology subject of the present invention is applicable in the field of pharmaceutical R+D, aiding the understanding of mechanisms that link drugs both to their intended and off-target effects.

Stage of Development: In silico preclinical validation of utility.

Intellectual property:

- Priority European patent application filed.
- Suitable for International extensión (PCT application)

Aims

Looking for partners interested in a license and/or collaboration agreement to develop and exploit this asset.

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