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Pharmacogenomics boosted high content screening approaches for drug discovery

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Despite the fact that many drugs on the market today were discovered through phenotypic screens, this approach is considered by many investigators as a "black box" and in many cases, target centric biochemical or cellular assays are preferred to support the initial drug discovery steps. Nevertheless, this "white box" approach clearly does not deliver all the expected success in term of drug developments, mostly due to the lack of pathophysiological relevance of the models. Now, the pharmaceutical industry is implementing new discovery paradigms to try to solve the current disconnect between the drug discovery process and the human clinical trials. Among the myriad of new technologies and approaches currently considered, High Content Screening combined with biosensors technologies, genome-editing and stem cell-derived cellular models offer the opportunity to drastically transform phenotypic screening, linking target engagement and phenotypic impacts in more relevant *in vitro* models. This new generation of phenotypic screens combined with the current drug discovery strategies represent a true opportunity to fulfill the gap between the screening dish and the patients. Despite the tremendous potential of HCS, researchers have to carefully consider various aspects of the projects before deploying the technology and this presentation will go through several examples highlighting the current strengths and weaknesses of the approach.

Biography

Jean-Philippe Stéphan, originally from Rennes, Brittany, France, received his Ph.D. in Developmental Biology from Pierre and Marie Curie University (Paris VI, France). After a postdoctoral fellowship at Genentech, he was hired as a Research Scientist in the Assay and Automation Technology department (AAT) at Genentech, Inc. Over his 17 years tenure at Genentech, Dr. Stéphan contributed to multiple research programs including the characterization of multiple therapeutic antibodies and later the target discovery when he was directing the functional genomics group. Dr Stéphan had a long-term interest in the development, evaluation, and implementation of new technologies that could be applied to the discovery and characterization of new therapeutics. In 2014, Dr Stéphan joined l'Institut de Recherche SERVIER as head of the cellular Models and HTS department. Since February 2017, Dr Stéphan is now directing SERVIER center of excellence for Pharmacological Screening, Compound Management, and Biobanking.

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