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Biotechnologies: Which one(s) and what trends and future for mid-size pharma companies

Jean A Boutin
SERVIER, France

The burst of technology has changed the landscape of research and production in Pharmaceutical companies, namely, and among many other areas: the manipulation of the synthetic capacities of microorganisms, the possibility to chemically synthesize enzymes, the access to stem cells-derived cellular tools and the use of vegetal cells to produce new compounds. Considering that the changing capacities in microorganisms is essentially a problem of enzyme(s) manipulation, it comes more and more important to understand the path between fundamental and practical knowledge on enzyme catalysis and mutagenesis and the catalytic capacities of those enzymes performing tasks they did not evolve to do. Further to this, it becomes easier to synthesize proteins in which exotic, non-natural amino acids have been incorporated in the sequence either to gain new function(s) or to incorporate specific signals, for example to follow the fate of the protein in cell. Stem cells can be derived, at least theoretically, to a large set of proteins. Even if the consideration of using those cells as therapeutic agents is still arguable, the use of those cells as host for biological experiments is of the highest importance for a better understanding of physiological processes at the cellular level. Finally, the immense amount of ethno-pharmacological data, accumulated for centuries in various countries, should lead us towards a better rationalization of the finding of the actives in the mixture used. To do so, emphasis should be put on the collection of plants in natura, and the description of the secondary metabolites found by such samples, and the way to render this approach a little more environment-friendly. Taking as examples some approaches, we chose in the last few years, such as protein engineering, total protein chemical synthesis and plant cell modification potential, the impact of those strategic changes and challenges in a mid-size company is described. How these new paradigms alter the classical organization and comprehension of the future of Pharma companies will also be discussed.

Biography

Jean A Boutin is graduated from Nancy University (France) on Drug Metabolism. He did two Postdoctoral training periods at Johns Hopkins University School of Medicine (Baltimore) and at the Karolinska Institutet (Stockholm, Sweden). He was hired as Protein Chemist in Les Laboratoires SERVIER (LLS) in 1986. During the 30th last years, he has moved from oncology to peptide research and then molecular and cellular pharmacology. Recently, LLS has created a drug discovery platform which he led until the 1st October 2016. Since then, he is the Directeur de la Prospective particularly in the technological areas associated with molecular pharmacology. These areas include, but are not limited to drug molecular modeling, ligand/protein biophysical interaction measurements, protein chemistry, stem cells, structural biology, chemogenetics, HTS, biologics. The main interests of him are N-myristoyltransferase, melatonin, quinone reductase 2, MCH and autotaxin.

jean.boutin@servier.com

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