

2nd International Conference on Genomics & Pharmacogenomics

September 08-10, 2014 DoubleTree by Hilton Hotel Raleigh-Brownstone-University, USA

Enzymes and biotechnology: Can we overcome modern challenges?

Junio Cota Silva
VTT Brasil, Brazil

Enzymes are special biomolecules that can catalyze a wide range of reactions in nature, from a simple hydrolysis reaction to the synthesis of a complex organic compound such a drug molecule. The dawn of the genomic age has boosted enzyme research, and diverse bioinformatics tools have made DNA manipulation easier. A variety of studies have been carried out in various research fields with the aim of prospecting and exploiting a large diversity of enzymes. Such studies combined with computational analysis allow knowledge to move from spread out data to a systemic network, where it is possible to elucidate and map complex metabolic pathways, like plant cell wall breakdown. Databases such as NCBI and JGI make numerous genomes publicly available, which can be scanned using bioinformatics tools to discover new and different enzymes. Unveiling the properties of an enzyme requires hard and time-consuming laboratory work, relying on biochemical, biophysical and structural studies to understand better its function and mechanism of action. Once an enzyme is characterized, this opens up possibilities for applying modern approaches in order to overcome limitations of the native enzyme, like product inhibition, poor reaction yields or thermolability. Besides those mentioned; current challenges also include prospection for new synthetic routes for food processing, green chemistry, and drug discovery. Fortunately, these challenges can be met using the appropriate molecular biology tools. Therefore, genomics approaches might provide a good screening engine for discovering new enzymes and microbial sources.

Biography

Junio Cota Silva has completed his PhD at the age of 27 years from University of Campinas, Brazil. He worked for three years (2010-2013) as a Research Associate at Brazilian Bioethanol Science and Technology Laboratory, and now he is a Research Scientist in Biotechnology at VTT Brazil, a Finnish Technical Research Center. He has published more than 15 papers in reputed journals and 5 chapters in international books.

Junio.Silva@vttbrasil.com