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AlgoLight, a photobioreactor platform for microalgae-based biopharmaceuticals

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Abstract

Microalgae are explored as a next-generation platform to produce biopharmaceuticals. Compared to current methods (mammalian cells, yeast, bacteria), plant-based techniques have the advantages of higher biosynthetic capacity, genetic engineering flexibility, absence of human pathogens, and finally lower cost. Photosynthetic microalgae have been proven at the lab scale to be a viable option for recombinant protein production, due to successful genes expression. On the way to commercialization, process development is now critical.

A process using genetically modified microorganisms must meet the regulatory legislation (UE Directive 2009/41/CE 6 May 2009). The production of microalgae in low-cost open systems can be easily contaminated and cannot avoid the spread of strains into the environment. A containment is possible in closed bioreactors, but the axenic character is not guaranteed, the control of the growth parameters is complex, the poor light distribution (either solar or artificial) is the limiting factor leading to low productivity. Opening a way to the cGMP-compliant production of plant-based therapeutic proteins in large-scale systems, our PRIAM photobioreactor is currently being scaled-up into a pre-industrial platform.

Biography:

Jean Francois JENCK has spent 35 years in the fine and petrochemical industries, from R&D to operations and investments. Formerly Technology Counselor of a multinational firm, he refocused to biotechnology and co-founded different start-ups (ENKI Innovation, AlgoSource, AlgoLight).

Speaker Publications:

1. "Process for preparing a liquid extract of phycobiliproteins, in particular phycocyanin, from cyanobacteria or microalgae and extract thus obtained"; 2017.
2. "Optimized bio-mitigation of CO2 in cement industry"; 2015.
3. "Microalgae: from production engineering to recovery"; Biofutur, 2014: Vol 360: 50-51.
4. "From production engineering to validation"; 2014.
5. "ChemInform Abstract: Palladium-Catalyzed Direct Amination of 2,3-Dihydrofuran (I) by Morpholine (II)"; ChemInform; 2010, Vol 24(6).

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