

Leveraging Photosynthesis via Synthetic Biology to Address Climate Change and Produce Low Cost Sustainable Chemicals and Fuels

Bruce Dannenberg

Founder, President and CEO, Phytonix Corporation

This presentation will provide an overview of how Phytonix is employing synthetic biology to address the global challenges of climate change and the production of cost competitive, sustainable chemicals and fuels. Phytonix and its organism development partners are using synthetic biology, genomics and metabolomics to develop efficient photosynthetic microbial cell factories for the direct and sustainable production of butanols and octonols, valuable industrial chemical intermediates and potential “drop-in” gasoline and diesel replacement fuels. Produced from solar energy utilizing carbon dioxide as the sole, direct feedstock, and with oxygen as the co-product, this is a significantly carbon-negative and sustainable process.

The provision of an affordable, available and sustainable carbon source has been one of the greatest barriers to the production of economically viable renewable chemicals. Phytonix’s industrial chemical production plants, integrating its microbial cell factories along with cutting-edge process technologies, will be co-located on site at industrial facilities emitting large amounts of carbon dioxide. These include manufacturing plants, chemical plants, coal-fired or gas-fired thermal power plants, EOR facilities, steel and aluminum mills, cement plants and even breweries.

Economic and environmental opportunities and advances in industrial biotechnology with a global focus on de-carbonization are leading to a rapid transition towards a new bio-economy and ultimately to a CO₂-based circular economy to produce industrial and consumer products. An overview of Phytonix’s current strategic partnership initiatives for scaling up to pilot production and full commercial deployment in the U.S.A. and Europe will also be discussed.