

Press Release



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Insilico Biotechnology granted patent for biotechnological process that turns climate-damaging CO₂ into valuable products

(Stuttgart) – Insilico Biotechnology, a company that specialises in the development and optimisation of biotechnological production processes, has been granted a patent for a new method that enables carbon fixation from carbon dioxide. The method involves specifically developed microorganisms that not only render CO₂ from industrial exhaust gases harmless, but can also be used to sustainably produce a wide range of carbon-based products.

The high consumption of fossil resources for energy production and as raw materials in the petroleum-based industry increases the greenhouse effect and associated global warming by CO₂ emission into the atmosphere. A clever way of solving the problem is to use waste carbon dioxide as a carbon source by removing it from the air.

Existing approaches use plants and algae that convert CO₂ into biomass by way of photosynthesis. However, these reactions depend on sunlight, which imposes considerable limitations on the design and scalability of suitable bioreactors.

Insilico Biotechnology's new method involves the use of bacteria whose metabolisms do not rely on sunlight. In order to equip them with the ability to fix CO₂, Insilico has identified enzyme combinations that bring in the respective metabolic pathways. Additional pathway components can be added or removed to enable the bacteria to convert the fixed carbon into a desired product. The required combinations of up to eight enzymes were optimised with comprehensive computer simulations using genome-based network models to ensure that the metabolic processes are highly efficient under different production conditions.

"The new method makes it possible to use CO₂ independent from sunlight to produce a broad range of different organic compounds such as carboxylic acids, fatty acids and alcohols, which in turn are then available for synthesising other compounds," says Insilico Biotechnology's CEO Klaus Mauch, summarising the ground-breaking advantage of the new technology. The newly granted patent adds another future-oriented application to Insilico Biotechnology's portfolio, thus demonstrating that metabolic simulations not only contribute to improving our understanding of biotechnological host organisms, but also enable previously almost insurmountable tasks to be tackled.

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Insilico Biotechnology is a market-leading company providing predictive solutions for the Bioeconomy. An interdisciplinary team of experts offers mechanistic models, customized software, and a high performance computing platform for the simulation of living cells. For world-leading pharma and biotech companies Insilico's technology lowers time, risk and costs of development processes. Founded in 2001, Insilico is a privately held company based in Stuttgart, Germany. For more information please visit www.insilico-biotechnology.com.

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