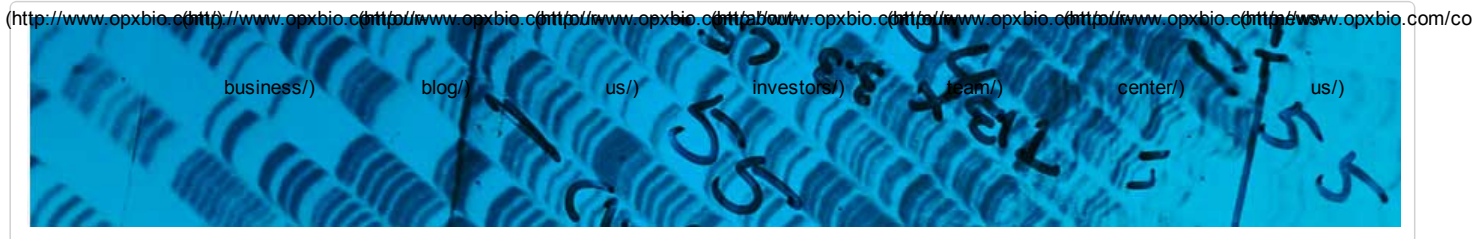


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Powered by the *EDGE® Technology Platform* (<http://www.opxbio.com/our-business/partners/>)

Technology

OPXBIO's patented Efficiency Directed Genome Engineering (EDGE) technology platform has proven to be a big advantage over traditional bioengineering approaches. EDGE enables OPXBIO to more rapidly, rationally, and robustly engineer microbes and develop cost-effective bioprocesses.

The EDGE technology is rapid – up to 5,000 times faster than conventional bioengineering methods for redesigning the genetic code of microbes. EDGE is also rational – meaning that we first determine and then purposefully program the specific, optimum genetic code in a microbe for bio-based production of our products rather than counting on random genetic changes to evolve a microbe that is only slightly improved. And EDGE is also robust – it enables OPXBIO to construct the optimum production pathway in the microbe while also making the genetic changes that increase the microbe's vitality and productivity leading to consistently better performance and cost. EDGE creates a strong connection between microbe design and overall production process design so that the entire process can be optimized for best performance and cost. As an example, with EDGE, we developed the microbe to make BioAcrylic at commercially viable rates in just two years, perhaps up to 5 years faster than would have been possible with conventional technologies.

How EDGE Works

- With EDGE, we change the genetic code of millions of microbes. Then we run lab experiments to simultaneously test the ability of all the microbes to make our product.
- Unlike conventional approaches, with EDGE, we track every genetic change we make so we can relate specific genetic changes to microbe performance in our lab experiments. We can determine WHICH genetic changes affect performance in WHAT way.
- We then analyze all the data from our lab evaluations to determine how best to redesign a microbe's genetic code to achieve the best possible production of our desired product.
- Even in the later stages of process development and scale-up we can still use EDGE to rapidly adjust the genetic code of the microbe to further improve process performance and cost.
- Our EDGE platform is flexible, enabling us to redesign microbes to make a wide variety of products using a range of feedstocks.

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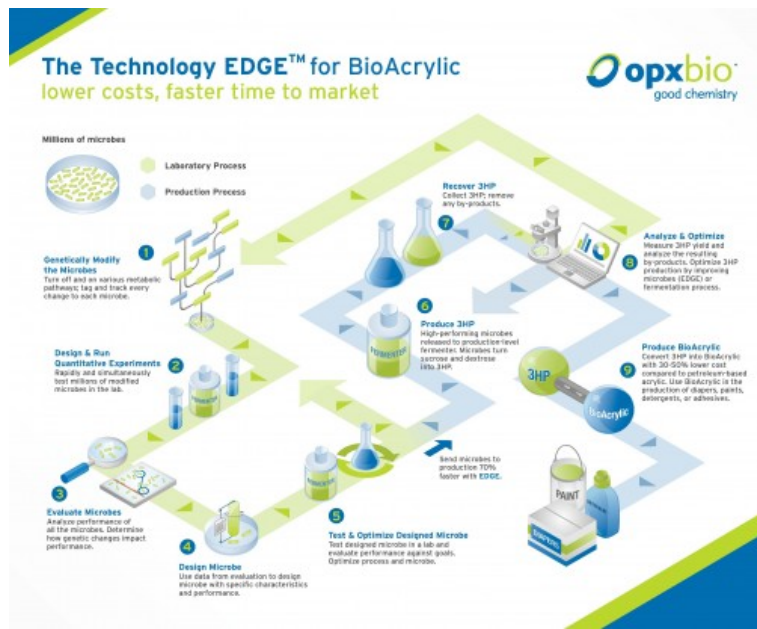
The Opportunity of Gas Feedstocks (<http://www.opxbio.com/2013/08/the-opportunity-of-gas-feedstocks/>)

OPXBIO is currently using EDGE to develop microbes and bioprocesses to make BioAcrylic – a more sustainable ingredient for diapers, detergents, paints, and adhesives. We also are using EDGE to make fatty acids for cleaning products and lubricants and for conversion into renewable diesel and jet fuels.

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Last week at the Society for Industrial Microbiology and Biotechnology (SIMB) 2013 Annual Meeting, I shared how OPXBIO is using ...

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